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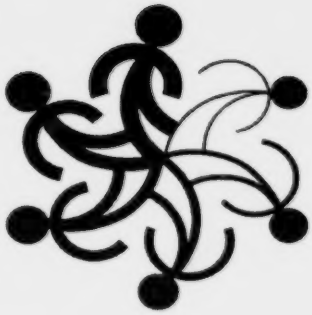
Readiness to Learn at School Among Five-year-old Children in Canada



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Note of appreciation

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Executive summary

Children's first years in school are fundamentally important for their later learning. Success in the early years of school has implications for future achievement in school and beyond. Early school success has been linked to the abilities, behaviours and attitudes that young children bring with them as they enter school for the first time. Information about where Canadian children stand on these dimensions as they begin their school careers can provide important insights for developing educational policies and practices in the country.

Among the factors at school entry that may contribute to early school achievement are the language and communication skill of children, their academic skill, self-regulation of their own learning, self-control of their behaviour, and their social competence and independence.

Child and family characteristics, such as the sex of the child, income level of the child's household, parent education, and family structure, have been linked to children's readiness to learn as they enter school. In addition, experiences in the home and community have been linked to children's readiness to learn, including the quality of their relationships with parents, educational activities at home, and opportunities to participate in group activities with peers, whether recreational or educational.

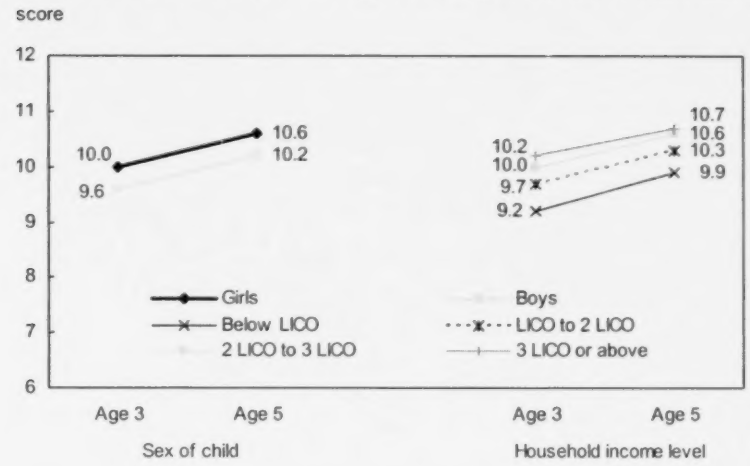
The present report used data from the National Longitudinal Survey of Children and Youth (NLSCY) to describe the readiness to learn at school of Canadian children who were 5 years old in 2002/2003. It describes home environment factors that may be linked to measures of readiness to learn. Finally, the report looks back two years in time, to see if trends in readiness to learn were already apparent when the children were 3 years old.

Language and communication skill

Language and communication skill are central to learning at school. Both vocabulary level and ability to communicate thoughts and needs have been identified as key components of readiness to learn. Canadian 5-year-old children varied in their abilities in this domain according to their sex, household income level, and other family characteristics.

- In receptive vocabulary, children in higher income households scored higher than those in lower income households. Vocabulary knowledge was higher for those whose mothers had more education, and for those in two-parent families. In communication skill, girls scored higher than boys. Again, higher income children scored higher than lower income children, and those whose mothers had higher education levels also scored higher than others. Looking back to age 3 demonstrated that differences in communication skill between girls and boys and between higher and lower income children already existed two years earlier (Figure 1).

Figure 1
Communication skill score at age 3 and age 5 by sex of child and by household income level



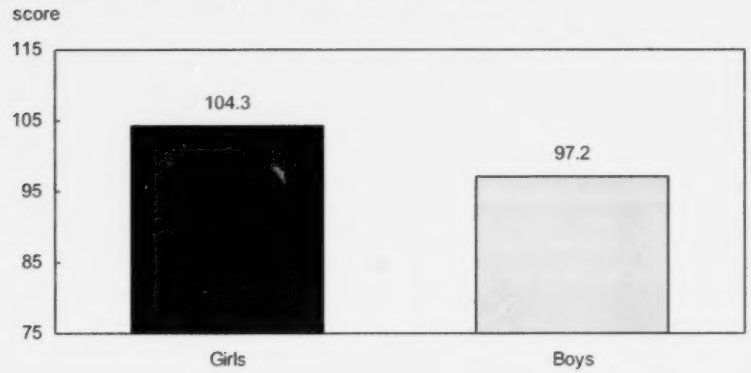
Notes: Score of 6 corresponds to the lower 5th percentile of the communication skill score distribution.
LICO refers to the low income cut-off.
Source: Statistics Canada: National Longitudinal Survey of Children and Youth 2002/2003.

Academic skill

The academic knowledge and skill that children bring to school may contribute to their early learning. Number knowledge was one of the abilities tested. In addition, children were assessed in copying and symbol use, a measure that has been linked very strongly to academic achievement. Differences appeared among Canadian 5-year-olds in both measures.

- The number knowledge of children was linked to child and family characteristics. Children with higher household income levels and higher parent education levels, and those with two-parent family structures all tended to have higher number knowledge scores than other children.
- For copying and symbol use, similar socioeconomic patterns appeared. In addition, girls outperformed boys in this ability (Figure 2), and children with parents born outside Canada outscored those with parents born in Canada. Copying and symbol use, which includes skills that are specifically taught in school, was higher for those 5-year-olds who were in kindergarten than for those who were not.

Figure 2
Copying and symbol use score by sex of child



Note: Score of 75 corresponds to the lower 5th percentile of the copying and symbol use score distribution.
Source: Statistics Canada: National Longitudinal Survey of Children and Youth 2002/2003.

Self-regulation of learning

Self-regulation of learning included measures of attention, work effort, and curiosity level, all considered important for early school success. Few differences appeared among children with different backgrounds on these variables. However, differences between girls and boys appeared for two of these measures.

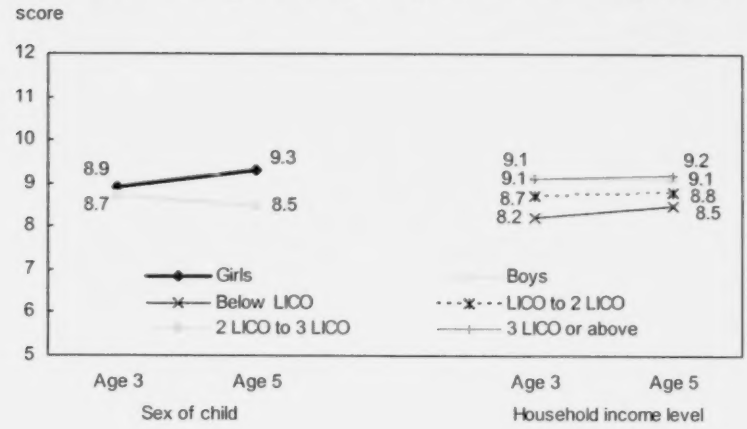
- Attention scores were higher for girls than for boys at age 5. Looking back 2 years found little difference in attention between girls and boys at age 3, suggesting that this difference forms over the preschool years, between age 3 and age 5 (Figure 3).
- There was a tendency for children in the lowest income category to score lower in attention than those in higher income groups. This difference was already apparent at age 3, and attention score did not change appreciably over the 2-year period for any of the income groups (Figure 3).
- Boys were rated higher in curiosity level than girls at age 5. Looking back to age 3 indicated that this difference existed two years earlier, but that the difference increased over the 2-year period, in part because of a greater decline in curiosity ratings for girls (Figure 4).

Self-control of behaviour

Teachers rate the ability to control impulsive behaviour as critical for children entering school.

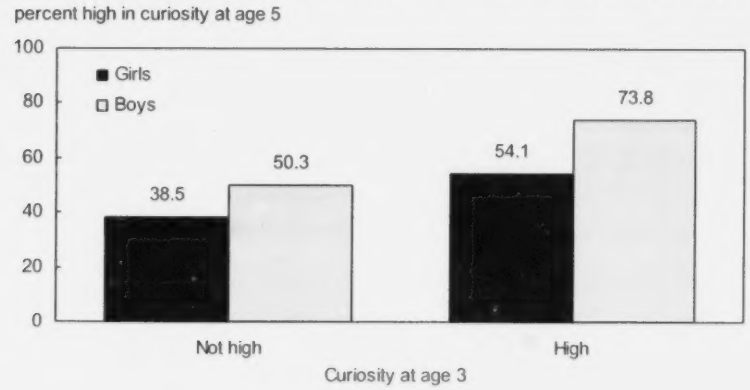
- Girls and boys differed in self-control of behaviour at age 5, with girls scoring higher than boys. Looking back to age 3 found no such difference. The difference came about as a result of increasing self-control on the part of girls over the 2-year period, while boys did not increase in this attribute.

Figure 3
Attention score at age 3 and age 5 by sex of child and by household income level



Notes: Score of 5 corresponds to the lower 5th percentile of the attention score distribution.
LICO refers to the low income cut-off.
Source: Statistics Canada: National Longitudinal Survey of Children and Youth 2002/2003.

Figure 4
Percent of girls and boys who were high in curiosity at age 5 by curiosity at age 3



Source: Statistics Canada: National Longitudinal Survey of Children and Youth 2002/2003.

Social competence

Playing cooperatively with other children leads to good early adjustment to school, including building positive relationships with peers and teachers.

- Children from lower income households were rated as lower in playing cooperatively with others than those from higher income households. Looking back two years showed that differences in cooperative play among income levels were relatively small at age 3, but that they increased, largely because higher income children who had been high in cooperative play tended to remain high over the two years, while lower income children who had been high in cooperative play were less likely to remain high.

Readiness to learn and home environment

Previous research has found important links between some home environment variables and readiness to learn. Positive parent-child interaction, cognitive stimulation in the home, and participation in educational and recreational activities were considered in this report.

- Receptive vocabulary scores were highest for children with high positive parent-child interaction scores, for those who were read to daily, and for those who participated in organized sports or physical activities.
- Communication skill was highest for those with high positive parent-child interaction scores and for those who participated regularly in organized sports or physical activities.
- Number knowledge was highest for those who were read to daily, and for those who participated in organized sports or physical activities, and in lessons in the arts.
- Copying and symbol use scores were highest for children who participated regularly in organized sports or physical activities, and in lessons in the arts.
- Cooperative play was associated with high positive parent-child interaction scores, and with regular participation in unorganized sports.

Do differences in home environment variables partly explain the differences in readiness to learn measures between children at different income levels?

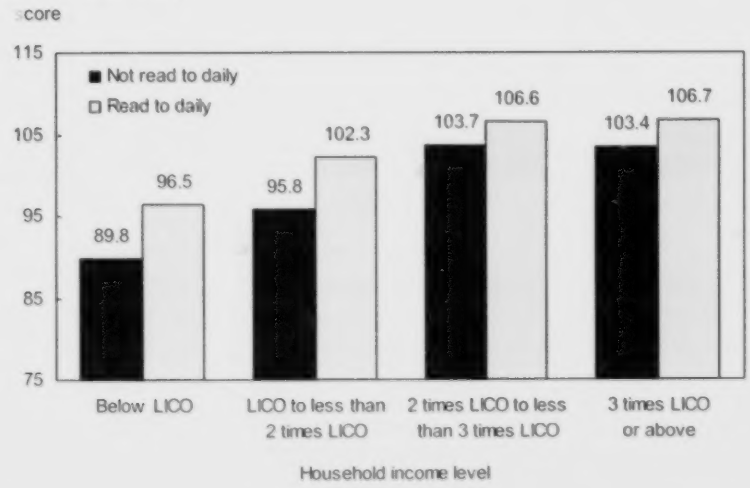
Children in lower and higher income homes differed in receptive vocabulary score, communication skill score, number knowledge score and copying and symbol use score. They also differed in home environment variables that predicted readiness to learn. The question asked was, are differences in readiness to learn measures between household income levels partly accounted for by differences in home environment variables for these groups?

As with all correlational data, links found among income levels, home environment variables, and readiness to learn measures do not imply causality. While the home environment variable may have resulted in the readiness to learn measure, it is also possible that the readiness to learn measure affected the home environment variable. Alternatively, an underlying factor that was not considered in the analysis could explain both the home environment variable and the readiness to learn measure, and it may be linked to income as well. However, some of the relationships found here among income level, home environment variables, and readiness to learn measures are consistent with studies in the research literature.

- Children in low income households who were read to daily had higher scores in vocabulary than children in low income households who were not read to, just as higher income children did (Figure 5). However, they were less likely to experience daily reading than higher income children. This may help to account for the higher vocabulary scores of the higher income children overall. Similarly, differences in receptive vocabulary score between lower and higher income children were partly accounted for by participation in organized sports and physical activities.
- Differences in communication skill score between lower and higher income children were partly accounted for by positive parent-child interaction (Figure 6), and by participation in organized sports and physical activities.
- Differences in number knowledge score between lower and higher income children were in part accounted for by daily reading to the child.
- For copying and symbol use score, participation in organized sports and lessons in physical activities (Figure 7) partly accounted for income level differences, as did lessons in the arts.

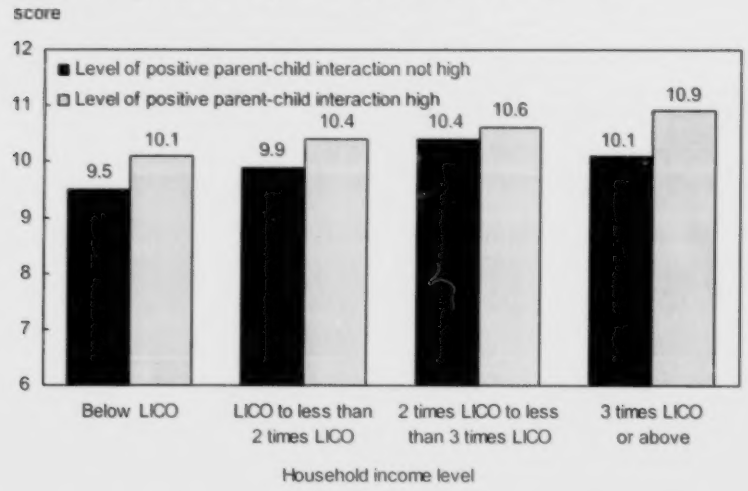
These findings can all be interpreted in the same way: whether children were living in low income or higher income households, daily reading, high positive parent-child interaction, participation in organized sports, lessons in physical activities, and lessons in the arts were linked with higher scores on readiness to learn measures. The fact that the lower income children were less likely to experience the home environment factor may help to explain the overall differences in readiness to learn scores between the income levels.

Figure 5
Receptive vocabulary score of children at four household income levels who were or were not read to daily



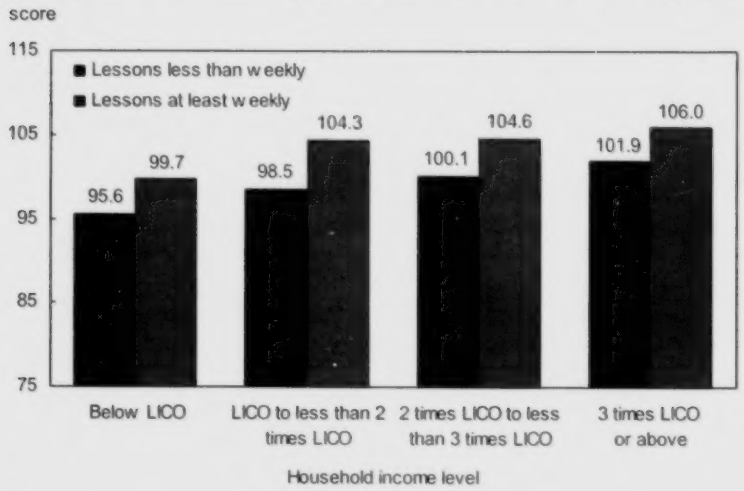
Notes: Score of 75 corresponds to the lower 5th percentile of the receptive vocabulary score distribution.
LICO refers to the low income cut-off.
Source: Statistics Canada: National Longitudinal Survey of Children and Youth 2002/2003.

Figure 6
Communication skill score of children at four household income levels who experienced not high and high levels of positive parent-child interaction



Notes: Score of 6 corresponds to the lower 5th percentile of the communication skill score distribution.
LICO refers to the low income cut-off.
Source: Statistics Canada: National Longitudinal Survey of Children and Youth 2002/2003.

Figure 7
Copying and symbol use scores of children at four household income levels who participated in lessons in physical activities less than weekly or at least weekly



Notes: Score of 75 corresponds to the lower 5th percentile of the copying and symbol use score distribution.
LICO refers to the low income cut-off.
Source: Statistics Canada: National Longitudinal Survey of Children and Youth 2002/2003.

Summary

This report provides an overview of Canadian children as they enter school as 5-year-olds. It looks at the collection of abilities, behaviours and attitudes that they bring with them, attributes that are important for early school achievement. The report shows that children vary on some dimensions of readiness to learn at school, according to their sex, their family characteristics, their background, and their home environment and experiences. It also shows that some of the differences in readiness to learn may already be evident two years earlier, when the children were 3 years old. Finally, the report indicates factors in the home environment that may contribute to differences among different economic groups. The report adds to what we know about readiness to learn. It provides information that may be useful for policy analysts, teachers, researchers, and parents themselves as they work toward maximizing the potential of preschool children everywhere.

1. Objective

The purpose of the present report is to provide an overview of readiness to learn at school among Canadian 5-year-old children in 2002/2003, including:

1. to present descriptive data on their readiness to learn at school, including language and communication skill, academic skill, self-regulation of learning, self-control of behaviour, and social competence and independence;
2. to examine links among the domains of readiness to learn;
3. to report on patterns of readiness to learn according to child and family characteristics, including: sex of the child, income of the household, parent education level, family structure, country of birth of the parent, kindergarten attendance of the child, community type and size, and province of residence;
4. to investigate dimensions of the home environment of children that may be linked to differences in readiness to learn at age 5 among demographic groups, including interaction with the parent, cognitive stimulation in the home, child activities outside the home, and early childhood education activities at age 3;
5. to discover whether patterns of school readiness that existed at age 5 were already apparent two years earlier, at age 3, or whether they emerged over the two-year preschool period.

2. Background and rationale

Children's first years in school are fundamentally important for their later learning. Success in the early years of school has implications for future achievement in school and beyond, as has been well documented (e.g., Doherty 1997; Kurdek and Sinclair 2000; Lonigan 2006; Snow 2006). Early school success has been linked to the abilities, behaviours and attitudes that young children bring with them as they enter school for the first time (Denton & West 2002; Ladd 2003; Lonigan 2006; Rathburn & West 2004; Rouse, Brooks-Gunn and McLanahan 2005; U.S. Department of Health and Human Services 2003; West, Denton & Reaney 2001). Information about where Canadian children stand on these dimensions as they begin their school careers can provide important insights for developing educational policies and practices in the country.

Dimensions of readiness to learn at school

Defining school readiness has been controversial for many years. In 1991, the National School Readiness Task Force in the United States produced a report that redefined school readiness as a concept that goes beyond the academic, to include social and emotional components (Vernon-Feagans and Blair 2006). That report included as dimensions of school readiness not only the collection of abilities, attitudes and behaviours with which a child enters school, but also the environmental and family support available for the child; the quality and practices within schools and classrooms; and the broader society as a whole. Contemporary education researchers and policy analysts continue to develop definitions of school readiness that go beyond the skills and dispositions of children at school entry. One recent formulation of school readiness with a broad, ecological perspective identified a set of indicators of school readiness that included measures from three domains (Graue 2006): family and community support (health care and physical development, family resources, early care and education, community conditions); receptive schools (teacher training, school policies and environment, policies regarding student behaviour, classroom characteristics); and the child. Other approaches have focussed more specifically on the concept of ready schools, that is, schools that are prepared to support readiness to learn in children. Some of these approaches have emphasized different aspects of classroom social processes that promote development (e.g., Ladd, Herald and Kochel 2006). Others have taken a transactional perspective, looking at interactions and transactions among people and institutions (child, peers, teachers, parents) as critical for readiness (Dickinson 2006). The controversy over what readiness is and how to measure it continues (Vernon-Feagans and Blair 2006).

In the present report the focus is on the readiness of children to learn at school. School readiness at the level of the child has been defined in many ways. The definition used here is that of the School Readiness to Learn Project at the Offord Centre for Child Studies at McMaster University: school readiness is defined as the ability of the child to meet the task demands of school (Offord Centre for Child Studies 2004). This definition includes not only the ability to learn the material being taught, but also the ability to behave in a way that allows the child to learn.

Most jurisdictions have described readiness to learn at school in broad terms. The National Education Goals Panel (NEGP) in the United States, which was created in 1990 to assess and

monitor progress towards national education goals in that country, adopted a definition that included five dimensions: health and physical development; emotional well-being and social competence; approaches to learning; communication skills; and cognition and general knowledge (NEGP 1997). This conceptualization has been used as a framework for research on school readiness by many researchers, educators and policy advisors.

A survey conducted by the National Center for Education Statistics (NCES) of the U.S. Department of Education in 1993 confirmed the appropriateness of a broad definition of school readiness. The survey asked a large sample of public school kindergarten teachers how important certain characteristics were for a child to be ready for their classes (Heaviside and Farris 1993). The survey found that the teachers described school readiness in comprehensive terms. In addition to physical health, more than 84% of them rated being able to communicate needs, wants and thoughts as essential or very important, while being enthusiastic and curious was rated highly by 76%. Classroom skills like following directions, not being disruptive, sitting still, taking turns, and finishing tasks were other dimensions of school readiness that were important for teachers, while the least important domains for them were the more academic skills, like problem-solving, alphabet knowledge, and counting.

Data from the Early Childhood Longitudinal Study-Kindergarten (ECLS-K; Lin, Lawrence and Gorrell 2003), also conducted by NCES, supported this view of school readiness by kindergarten teachers. The study found that another sample of kindergarten teachers placed a strong emphasis on communication ability and classroom social skills, with far less focus on knowledge of colours, letters and numbers, and other more academic aspects of learning. In recent years, however, studies have found an increased focus on pre-academic skills on the part of teachers as important in school readiness (see Snow 2006).

Recent work has emphasized the importance of self-regulation for school readiness. For example, Normandeau and Guay (1998) used a scale that assessed children's cognitive self-control, defined as the ability to plan, to evaluate, and to self-regulate one's problem-solving activities and one's attention to the task. They found that cognitive self-control was positively related to their achievement in the first year of school. Blair (2002) proposed a neurobiological model of the development of self-regulation in young children, and proposed that this development was directly linked to school readiness, supporting his theoretical model with examples drawn from the clinical and research literature. Self-regulation may play direct and indirect roles in school readiness. The Early Child Care Research Network of the National Institute of Child Health and Human Development (NICHD) reported on a study of attention processes in young children and the role they may play in mediating between home environment factors and school readiness (NICHD 2003a). They found that both sustained attention and self-control of impulsive behaviour in preschool children mediated the links between family environment and school readiness.

The present study is based on a framework that includes the various domains of readiness to learn at school identified by earlier researchers. This framework, which is described in more detail below, incorporates the recent focus on self-regulation, both self-regulation of impulsive behaviour and cognitive self-control of learning.

Demographic factors in readiness to learn at school

Differences in readiness to learn between girls and boys have been reported in several studies. For example, the first report of a national study of 22,000 kindergarten children in the United States, the Early Childhood Longitudinal Study, Kindergarten Class of 1998-99 (ECLS-K), found that girls outperformed boys on early reading measures, social skill indicators, fine and gross motor skills, activity and attention levels, communication skills, task persistence, and eagerness to learn (West, Denton and Germino-Hausken 2000). Income differences in readiness to learn have been well-known for over 40 years in North America. The Head Start program in the United States was founded in 1965 to promote school readiness among preschoolers in low-income families, in an attempt to bridge the known gap between children from poor families and those from more privileged home situations (U.S. Department of Health and Human Services 2003). The ECLS-K report cited above found important differences in school readiness linked to family risk factors that included low parent education, single parent status, and low income. Lee and Burkam (2002) found an achievement gap in reading and math for poor students at kindergarten entry, based on an independent analysis of ECLS-K data. The present study examines readiness to learn differences between girls and boys and between children from low income and higher income households, in an attempt to clarify these links among Canadian children.

Home environment and readiness to learn at school

Researchers have identified factors in the family environment of children that contribute to readiness to learn, including the nature of parent-child interactions and the degree of cognitive stimulation in the home. Children who experience positive interactions with a nurturing, involved parent have been found to have better school and social outcomes than others (e.g., Connell and Prinz 2002; NICHD 2003b; Mashburn and Pianta 2006; Pettit, Bates and Dodge 1997). For example, Pettit, Bates and Dodge (1997), in their longitudinal study of over 500 children entering kindergarten, found that their measures of parental warmth and positive involvement were linked positively with academic performance and social skills in kindergarten. Children who are read to and otherwise receive cognitive stimulation in the home also tend to succeed in the early school years (e.g., Brooks-Gunn and Markman 2005; Hill 2001; Kohl, Lengua, McMahon et al. 2000; Whitehurst, Falco, et al. 1988; Sénéchal and LeFevre 2002). Children who participate in group activities like sports, physical activities, and other learning activities are more likely to be ready for school than less active children (Manitoba Department of Health 2005).

The home environments of children may differ according to their sociodemographic situation, which may in part account for differences in readiness to learn between demographic groups. For example, parents in lower income families who experience higher levels of stress have been found to be less warm and nurturing in their parenting activities than others (Pettit, Bates and Dodge 1997). Similarly, reports based on data from the ECLS-K showed that children in higher risk households (lower income, low parent education levels) are less likely to be read to on a regular basis than others (e.g., Nord, Lennon, Liu, and Chandler 1999). Children living in lower income, higher risk neighbourhoods that have fewer community resources are less likely to be involved in early group recreational and learning activities and tend to have poorer cognitive

outcomes (Manitoba Department of Health 2005). A large body of research reports on preschool interventions for low-income children that have increased readiness to learn at school among these groups (e.g., Ramey, Campbell, Burchinal, Skinner, Gardner and Ramey 2000; Reynolds and Temple 1998; U.S. Department of Health and Human Services 2003). These intervention studies have demonstrated that early childhood education projects can reduce the gap in readiness to learn and subsequent school achievement between disadvantaged groups and other children. The present report looks at links between home environment and readiness to learn for different demographic groups, to examine whether differences are partly explained by home environment factors.

The present study

The present study uses a comprehensive framework drawn from the research literature to study readiness to learn at school in Canadian 5-year-olds. It looks at many of the demographic variables and environmental factors that have been reported as being important for readiness to learn. The report presents an overview of readiness to learn at school in Canada, and investigates the following specific research questions:

- Are there differences in readiness to learn between demographic groups?
- Do home environment variables predict readiness to learn, and if so, do they explain differences between children at different income levels?
- When do differences in readiness to learn between demographic groups develop?

3. Methods and procedures

Participants

The children studied here included all 5-year-olds in the third longitudinal cohort of the National Longitudinal Survey of Children and Youth (NLSCY; see Appendix A). These children were born between April and December in 1997, and were 5 years old as of December 31, 2002. At the time of interview, they ranged from 57 to 65 months old. Altogether 3,923 children were included in the sample, representing approximately 360,000 5-year-olds in the Canadian population. Note that because of the sample selection procedure, no children who were born in the first four months of the year are included in the study; therefore, conclusions apply to a population of 5-year-olds that is relatively young.

Measures

Measures of readiness to learn at school

The domains of readiness to learn at school examined in this paper include:

1. Language and communication skill
2. Academic skill
3. Self-regulation of learning
4. Self-control of behaviour
5. Social competence and independence

Much of the information in the survey was provided by the person most knowledgeable about the child, usually the mother. She provided information about herself, the household and family, and the child. Direct measures of the child's abilities were also taken. These included a test of receptive vocabulary, the Peabody Picture Vocabulary Test - Revised (PPVT-R); a Number Knowledge Assessment; and "Who Am I?", which is a test of developmental level that assesses the ability of a child to copy shapes and to reproduce symbols like letters, words and numbers (De Lemos 2002).

Some of the measures available within the NLSCY data set for each of the domains of readiness to learn under study are listed below. Details about the measures appear in Appendix B.

1. Language and communication skill
   Receptive vocabulary score
   Communication skill score (age 3 and age 5)

2. Academic skill
   Number knowledge score
   Copying and symbol use score

3. Self-regulation of learning
   Attention score (age 3 and age 5)
   Work effort score (age 3 and age 5)
   Curiosity level (age 3 and age 5)

4. Self-control of behaviour score (age 3 and age 5)

5. Social competence and independence
   Cooperative play (age 3 and age 5)
   Independence in dressing (age 3 and age 5)
   Independence in cleanliness (age 3 and age 5)

Child and family characteristics (demographic variables)

Several child and family characteristics were included as predictor variables in the analyses. They included: sex of the child, household income level (four levels: see Appendix B), parent education level (high school or less than high school/more than high school), family structure (one-parent/two-parent), country of birth of parent (not Canada/Canada), kindergarten attendance of child (not attending/attending), community size (five levels, rural to 500,000 and over: see Appendix B), and province of residence.

This report presents an overview of readiness to learn measures for all child and family characteristics. More detailed analyses in the present report focus on sex of the child and household income level.

Home environment variables

The NLSCY data set contains several variables that measure aspects of the home environment of children (see Appendix B). These include family environment and participation by the child in group activities. Family environment variables include:

1. Positive parent-child interaction

2. Cognitive stimulation in the home
   Daily reading to the child
   Daily number use with the child

Parents were asked how often their child participated in several different kinds of group activities. These included:

1. Participation in organized sports
2. Participation in unorganized sports
3. Participation in lessons in physical activities
4. Participation in lessons in the arts

Parents were asked whether the child attended any early childhood education program or activity, such as nursery school, play group, drop-in centre and others (see Appendix B). Participation in one or more such activities at age 3, two years before the readiness to learn measures, was used as a predictor variable in the investigation.

Data analysis and statistical procedures

Statistical and substantive significance. Because of the large size of the sample under study, many statistics were statistically significant even though the effects were small. Unless noted otherwise, only effects that were both statistically and substantively significant as defined in Appendix C are reported as significant in this paper.

Are there differences in readiness to learn measures between demographic groups? To answer this question, the means of all continuous readiness to learn measures at age 5 were compared for the eight child and family characteristics under study. The categorical readiness to learn measures were cross-tabulated with the child and family characteristics, to determine whether there were important differences in readiness to learn between demographic groups.

Do home environment variables predict readiness to learn at school, and if so, do they explain differences between children at different income levels? This question was answered by comparing the means of the continuous measures for the seven home environment variables, and cross-tabulating the categorical readiness to learn measures with the home environment variables, in order to determine if there were important readiness differences linked to home environment. Next, the categorical measures of home environment were cross-tabulated with the eight child and family characteristics (that is, the demographic variables), to establish whether there were important differences between demographic groups in these home environment variables. Finally, where a home environment variable predicted readiness to learn, and household income predicted both the home environment variable and the readiness to learn measure, an analysis was undertaken to discover whether the household income level predicted readiness to learn indirectly, by way of the environment variable. The purpose was to establish whether the home environment variable explained part of the difference in readiness to learn between lower and higher income level children. These statistical procedures are described in detail in Appendix C.

A separate set of analyses was undertaken to look at possible links between early childhood education activities at age 3 and readiness to learn measures at age 5. Because this age 3 variable was strongly linked to household income, the analysis was undertaken separately for the four household income levels. Within each income level, the means of continuous readiness to learn measures at age 5 were compared for children who did and did not participate in early childhood education activities at age 3, and the categorical readiness to learn measures were cross-tabulated with the participation variable, to determine whether there were important differences in readiness to learn among them.

When do differences in readiness to learn measures between demographic groups develop? A series of analyses was undertaken that looked back in time to try to discover whether the differences in readiness to learn that were found at age 5 between girls and boys and between

children with different household income levels were already apparent two years earlier. Readiness to learn measures at age 3 were compared between girls and boys and between household income levels using mean comparisons and cross-tabulations. Change scores between age 3 and age 5 and three-way contingency tables that included readiness to learn measures at both ages were analyzed, to determine whether girls and boys or children at different income levels differed in their patterns of change over time.

4. Results

Descriptive statistics

Population descriptive statistics. The percentages and numbers of children in various demographic categories (with standard errors of the percentages) appear in Table 1. The children were 49% female and 51% male. For 16% of the children the income level of their household fell below the low income cut-off (LICO), for 38% it fell in a range from the LICO to less than 2 times the LICO, for 27% it fell in a range from 2 times the LICO to less than 3 times the LICO, and for 19% it fell at or above 3 times the LICO. Of the parents, 36% reported having an education level of high school completion or less, while 64% had more than high school completion. The majority of children, 85%, lived in two-parent as opposed to one-parent (15%) families. The reporting parents of 21% of the children were born outside Canada, while 79% were born in Canada. Eleven percent of the children were not attending kindergarten, while 89% were attending. As indicated in the table, 43% of the children lived in large cities of 500,000 population or more, 14% lived in cities of from 100,000 to under 500,000, while 43% lived in smaller cities, towns, or rural areas. Finally, the province of residence of the children was 41% Ontario, 22% Quebec, 12% British Columbia, and 11% Alberta, with the other 6 provinces accounting for the remaining 14%.

Patterns of child and family characteristics. Correlations among child and family characteristics (demographic variables) are presented in Table D-1. As expected, higher household income levels were associated with higher parent educations levels and with two-parent family structures. A significant link was also found between the country of birth of the parent and the population size of the community of residence, reflecting the tendency of immigrant populations to settle in cities rather than smaller communities: having a reporting parent born outside Canada was correlated with living in a large urban centre. No other correlations among child and family characteristics were significant.

Patterns of readiness to learn measures. Correlations among readiness to learn measures are presented in Table D-2. Significant associations were found among many of the readiness to learn measures. The most striking pattern concerned the communication skill score, which was correlated with measures from all five readiness to learn domains. Children with high communication skill scores tended to have high scores in receptive vocabulary, number knowledge, attention, work effort, self-control of behaviour, and cooperative play. Intercorrelations appeared among receptive vocabulary and academic skill, and those two academic skill scores were themselves strongly correlated. Children with high scores in attention also tended to have high scores in work effort, and both of these measures were associated with self-control of behaviour. These and other patterns that appear in the table provide a picture of how some readiness to learn measures tend to occur together, while others seem not to be linked at all. They provide context for the analyses that follow.

Table 1

Percent, standard error (SE) and number of children in the population by child and family characteristics

	Percent	SE	Population number
Sex of child			
Female	48.8	0.00	176,500
Male	51.2	0.00	184,900
Household income level			
Below LICO	16.2	0.82	58,700
LICO to less than 2 times LICO	37.9	1.02	137,100
Two times LICO to less than 3 times LICO	26.7	0.98	96,400
Three times LICO or above	19.2	0.77	69,300
Parent education level			
High school or less	35.6	1.05	125,700
More than high school	64.4	1.05	227,800
Missing	...	...	7,900
Family structure			
One-parent family	15.3	0.82	55,300
Two-parent family	84.7	0.82	306,100
Country of birth of parent			
Not Canada	21.4	0.89	75,000
Canada	78.6	0.89	276,000
Missing	...	...	10,400
All children	100.0	0.00	361,400

... not applicable

Notes

Population number has been rounded to the nearest 100.

Total sample number = 3,923.

LICO refers to the low income cut-off.

Source: Statistics Canada: National Longitudinal Survey of Children and Youth, 2002/2003.

Table 1 continued

Percent, standard error (SE) and number of children in the population by child and family characteristics

	Percent	SE	Population number
Kindergarten attendance			
Not attending	11.0	0.72	39,500
Attending	89.0	0.72	318,600
Missing	...	...	3,300
Community size - population			
Rural	9.7	0.87	35,200
Under 30,000	23.3	1.65	84,100
30,000 to under 100,000	10.1[E]	1.71	36,400
100,000 to under 500,000	13.5	1.14	48,800
500,000 and over	43.4	0.95	156,900
Province of residence			
Newfoundland and Labrador	1.4	0.00	5,200
Prince Edward Island	0.4	0.00	1,600
Nova Scotia	2.7	0.00	9,800
New Brunswick	2.2	0.00	7,900
Quebec	22.1	0.00	80,000
Ontario	41.3	0.00	149,300
Manitoba	3.8	0.00	13,600
Saskatchewan	3.2	0.00	11,700
Alberta	10.6	0.00	38,300
British Columbia	12.2	0.00	44,000
All children	100.0	0.00	361,400

... not applicable

[E] use with caution

Notes

Population number has been rounded to the nearest 100.

Total sample n = 3,923.

Source: Statistics Canada: National Longitudinal Survey of Children and Youth, 2002/2003.

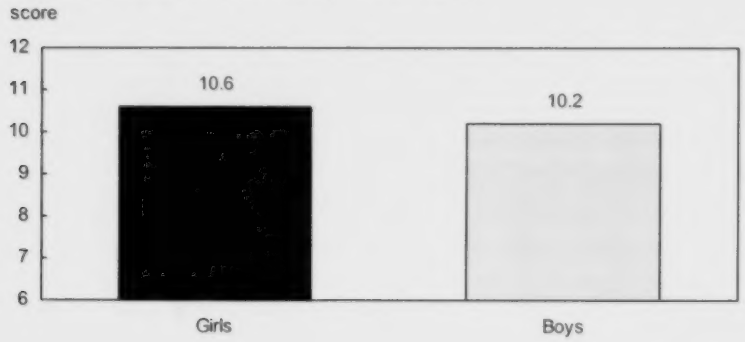
Patterns of home environment variables. Correlations among home environment variables are presented in Table D-3. Only three of these were significant. Positive parent-child interaction was associated with daily number use, while being read to daily was also linked with daily number use. Looking back two years, participation in organized sports at age 5 was found to be associated with the number of early childhood activities that the child participated in at age 3.

Readiness to learn at school and child and family characteristics

The first step in the analysis was to establish whether children in various demographic groups differed on any of the readiness to learn measures. The mean scores or percentages and the standard errors of all readiness to learn measures by eight child and family characteristics are presented in Table D-4 to D-14. An overview of the findings is presented below.

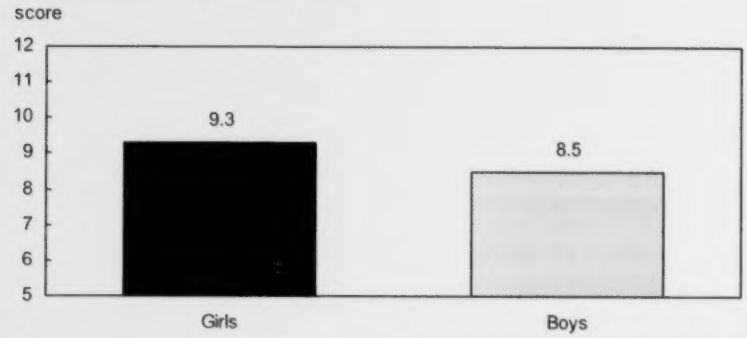
Sex of the child. Several significant differences in readiness to learn at age 5 were found between girls and boys. Girls scored higher in communication skill (Figure 8), copying and symbol use (Figure 2), attention (Figure 9), and self-control of behaviour (Figure 10), and they were rated higher in independence in dressing (Figure 11). Boys were rated higher in curiosity (Figure 12), while no differences appeared for receptive vocabulary, number knowledge, work effort, cooperative play, or independence in cleanliness between girls and boys.

Figure 8
Communication skill score by sex of child



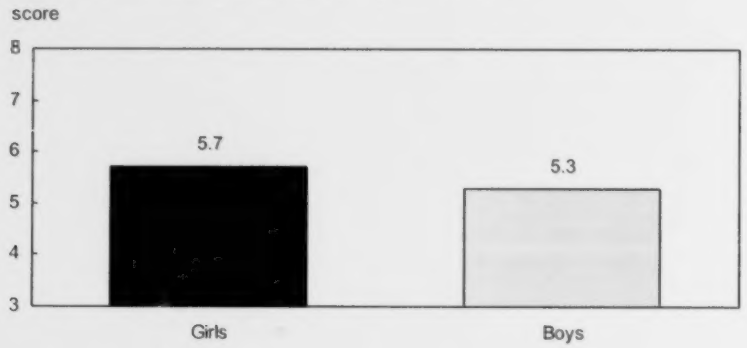
Note: Score of 6 corresponds to the lower 5th percentile of the communication skill score distribution.
Source: Statistics Canada: National Longitudinal Survey of Children and Youth 2002/2003.

Figure 9
Attention score by sex of child



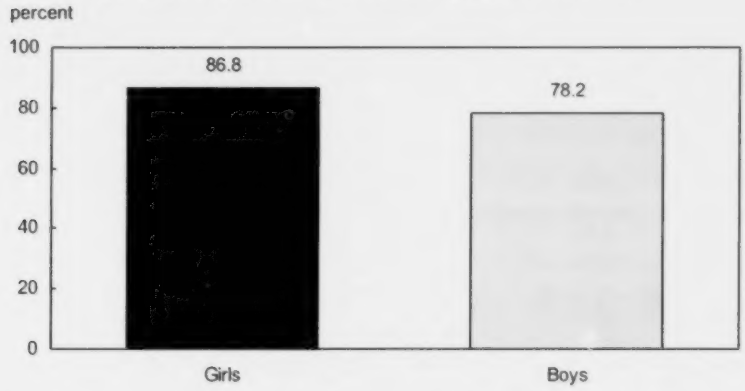
Note: Score of 5 corresponds to the lower 5th percentile of the attention score distribution.
Source: Statistics Canada: National Longitudinal Survey of Children and Youth 2002/2003.

Figure 10
Self-control of behaviour score by sex of child



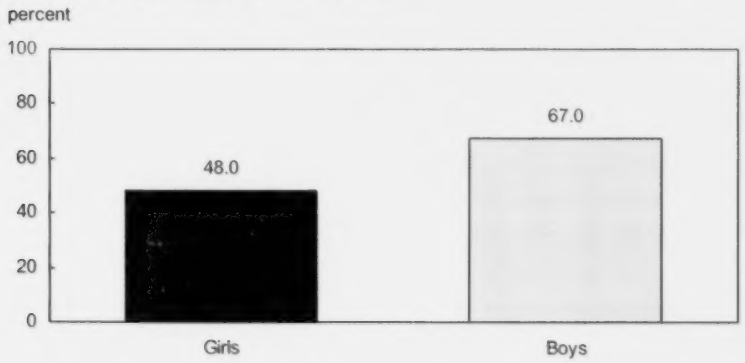
Note: Score of 3 corresponds to the lower 5th percentile of the self-control of behaviour score distribution.
Source: Statistics Canada: National Longitudinal Survey of Children and Youth 2002/2003.

Figure 11
Often displays independence in dressing by sex of child



Source: Statistics Canada: National Longitudinal Survey of Children and Youth 2002/2003.

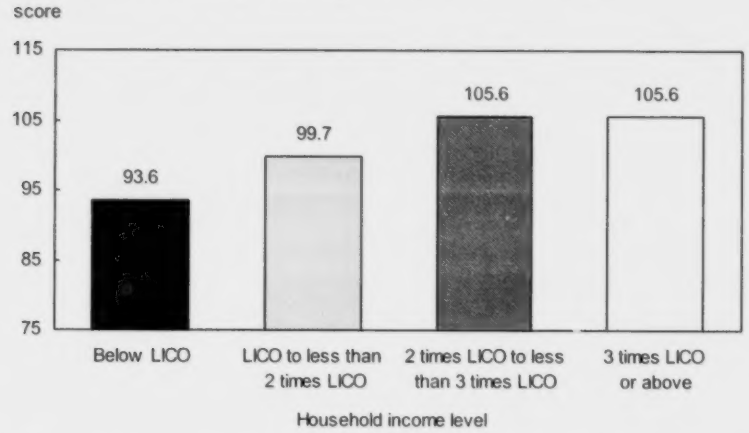
Figure 12
Often displays curiosity by sex of child



Source: Statistics Canada: National Longitudinal Survey of Children and Youth 2002/2003.

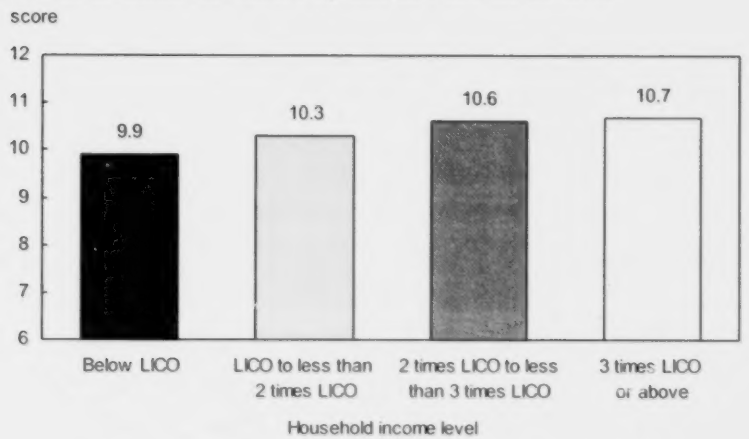
Household income level. Household income was a significant predictor of six of the eleven readiness to learn measures, with children from lower income households scoring lower than those from higher income level households in every case. Significant differences were found between income levels in receptive vocabulary (Figure 13), communication skill (Figure 14), number knowledge (Figure 15), copying and symbol use (Figure 16), attention (Table D-8), and cooperative play (Table D-12). No differences appeared for work effort, curiosity, self-control of behaviour, independence in dressing, or independence in cleanliness.

Figure 13
Receptive vocabulary score by household income level



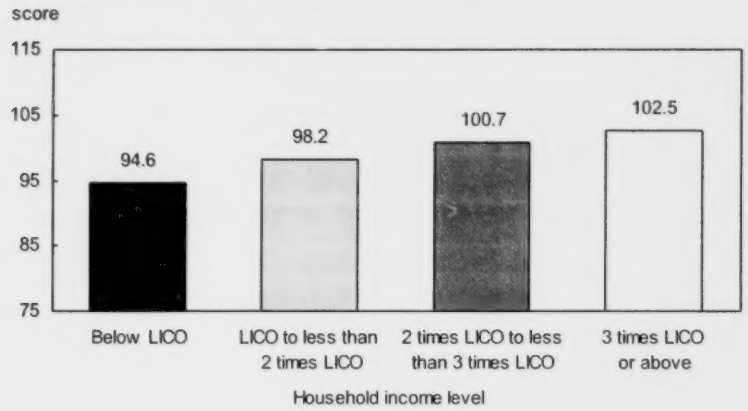
Notes: Score of 75 corresponds to the lower 5th percentile of the receptive vocabulary score distribution.
LICO refers to the low income cut-off.
Source: Statistics Canada: National Longitudinal Survey of Children and Youth 2002/2003.

Figure 14
Communication skill score by household income level



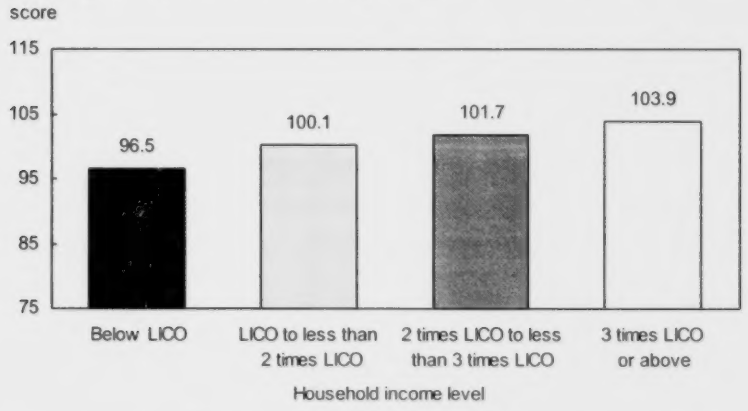
Notes: Score of 6 corresponds to the lower 5th percentile of the communication skill score distribution.
LICO refers to the low income cut-off.
Source: Statistics Canada: National Longitudinal Survey of Children and Youth 2002/2003.

Figure 15
Number knowledge score by household income level



Notes: Score of 75 corresponds to the lower 5th percentile of the number knowledge score distribution.
LICO refers to the low income cut-off.
Source: Statistics Canada: National Longitudinal Survey of Children and Youth 2002/2003.

Figure 16
Copying and symbol use score by household income level



Notes: Score of 75 corresponds to the lower 5th percentile of the copying and symbol use score distribution.
LICO refers to the low income cut-off.
Source: Statistics Canada: National Longitudinal Survey of Children and Youth 2002/2003.

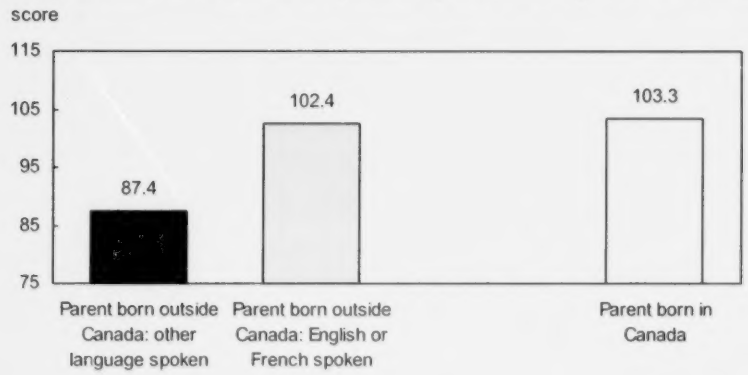
Parent education level and family structure. Two child and family characteristics are linked strongly to household income. These are parent education level and family structure (Table D-1). As shown in the tables (Table D-4 to D-14), these two demographic variables presented some of the same patterns of association with readiness to learn measures as household income level, but these were only significant in two of the domains of readiness to learn; specifically, language and communication skill, and academic skill. Lower parent education level was associated with lower receptive vocabulary (Table D-4), communication skill (Table D-5), number knowledge

(Table D-6), and copying and symbol use scores (Table D-7). One-parent family status was linked with lower receptive vocabulary (Table D-4), number knowledge (Table D-6), and copying and symbol use scores (Table D-7). No links were found between either parent education level or family structure and the other domains of readiness to learn.

Country of birth of parent. Country of birth of the reporting parent presented three interesting patterns. Children with parents born outside Canada scored significantly lower in receptive vocabulary than those with parents born in Canada. As shown in Figure 17, however, those with parents born outside Canada whose main spoken language at home was either English or French did not differ from children with parents born in Canada in receptive vocabulary score, while those who spoke other languages at home scored well below the other groups. In contrast to receptive vocabulary, those with parents born outside Canada scored significantly higher than others in copying and symbol use (Table D-7). Finally, those with parents born outside Canada were rated as lower in independence in cleanliness than others (Table D-14).

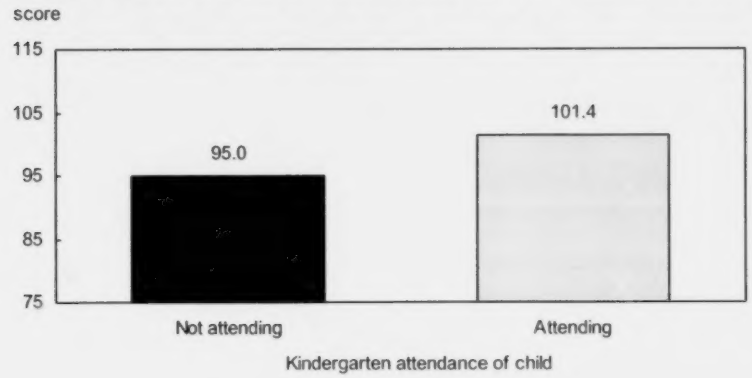
Kindergarten attendance. Most 5-year-old children in Canada, 89% of them, were attending kindergarten in 2002/03 (Table 1). It should be noted that kindergarten attendance differed in important ways among provinces, because of varying provincial policies regarding kindergarten. Only one important difference in readiness to learn appeared between those who did and did not attend, and that was in copying and symbol use score (Figure 18). Those not in kindergarten scored lower than those who were attending kindergarten, a finding that is consistent with the nature of the test, which measures skills that are taught in school (De Lemos 2002). No other differences appeared between these groups for any of the domains of readiness to learn.

Figure 17
Receptive vocabulary score by country of birth of parent and language spoken at home



Note: Score of 75 corresponds to the lower 5th percentile of the distribution of scores for receptive vocabulary.
Source: Statistics Canada: National Longitudinal Survey of Children and Youth 2002/2003.

Figure 18
Copying and symbol use score by kindergarten attendance of child



Note: Score of 75 corresponds to the lower 5th percentile of the copying and symbol use score distribution.
Source: Statistics Canada: National Longitudinal Survey of Children and Youth 2002/2003.

Community size. Few differences in readiness to learn appeared among children living in communities of different sizes in Canada. For receptive vocabulary, children living in cities with populations from 100,000 to under 500,000 had significantly higher scores than those in both smaller (30,000 to under 100,000) and larger (500,000 and over) cities (Table D-4). In contrast, for copying and symbol use, children living in the largest cities scored significantly higher than those in rural areas, in small towns (under 30,000), and in smaller cities (30,000 to under 100,000) as shown in Table D-7. Finally, those living in rural areas were rated higher in independence in cleanliness than those in the largest cities (500,000 and over), as shown in Table D-14.

Province of residence. Provincial differences were found in receptive vocabulary, number knowledge, and copying and symbol use scores. These are shown in Tables D-4 to D-14. It should be noted that differences among provinces in copying and symbol use may be accounted for in part by differences among them in kindergarten attendance.

Readiness to learn at school and home environment

Earlier studies in the research literature have found important links between some home environment variables and readiness to learn measures, as discussed in an earlier section. The next step in the present analysis was to determine whether there were important readiness to learn differences linked to home environment variables among Canadian 5-year-olds. This was done by comparing the means of the continuous readiness to learn measures for the seven home environment variables, and cross-tabulating the categorical readiness to learn measures with the home environment variables. The mean scores (or percentages) and standard errors of all readiness to learn measures for the seven home environment variables are presented in Table D-15 to D-25. An overview of findings is presented below.

Receptive vocabulary. Receptive vocabulary score was linked to four of the seven home environment variables (Table D-15). Higher mean receptive vocabulary scores were found for children who had high levels of positive interaction with the parent, who were read to daily, who participated in organized sports at least weekly, and who participated in lessons in physical activities at least weekly.

Communication skill. Communication skill score was significantly higher for children who had high positive interaction with the parent, for those who participated in organized sports, and for those who participated in lessons in physical activities than for other children (Table D-16).

Number knowledge. Number knowledge score was linked to frequency of reading to the child, participation in organized sports, participation in lessons in physical activities, and participation in lessons in the arts: children with higher levels of participation in these activities had higher scores in number knowledge than did other children (Table D-17).

Copying and symbol use. Copying and symbol use score was linked with participation in organized sports, lessons in physical activities, and lessons in the arts. For all variables, those children who participated at least weekly tended to have higher scores in copying and symbol use than other children (Table D-18).

Self-regulation of learning (Table D-19 to D-21). Of the three self-regulation of learning measures, only curiosity was associated with any of the home environment variables. Children who had high levels of positive interaction with the parent and those who were encouraged to use numbers daily were rated higher in curiosity than others (Table D-21). In contrast, those who participated at least weekly in lessons in physical activities were lower in curiosity than others, possibly because of the links described earlier between sex of the child and curiosity on the one hand (high for boys) and lessons in physical activities on the other (high for girls). Neither attention score (Table D-19) nor work effort score (Table D-20) was linked to any of the home environment variables.

Self-control of behaviour. No differences were found for any of the home environment variables in self-control of behaviour (Table D-22).

Social competence and independence (Table D-23 to D-25). Children with high levels of positive interaction with the parent, and those who participated at least weekly in unorganized sports were rated higher in cooperative play than other children (Table D-23). Independence in dressing was not associated with any of the home environment variables (Table D-24), while independence in cleanliness was linked to frequency of number use with the child and participation in unorganized sports (Table D-25).

Home environment and child and family characteristics

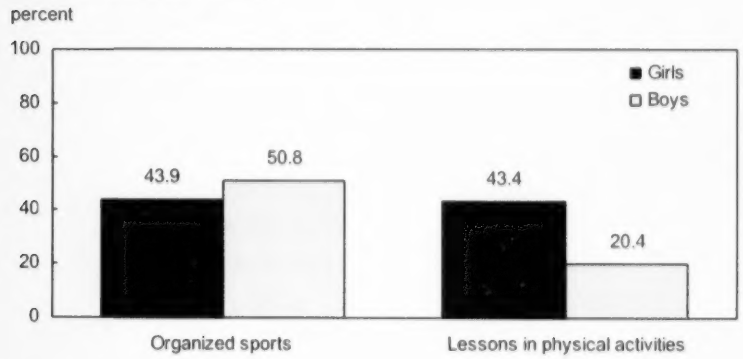
The next step in the analysis was to determine whether there were important differences between demographic groups in home environment variables that are linked to readiness to learn, as discussed above. These home environment variables were cross-tabulated with the eight child and family characteristics under study to answer this question. The percentages and standard

errors of all home environment variables by eight child and family characteristics are presented in Table D-26 to D-32. An overview of the findings is presented below.

Sex of the child. For two of the seven home environment variables at age 5, significant differences were found between girls and boys (Figure 19). A lower percentage of girls than boys were involved in organized sports on a weekly basis (Table D-29), while a higher percentage of girls than boys participated in lessons in physical activities such as dance lessons, martial arts, and similar pursuits (Table D-31). No differences appeared between girls and boys in positive parent-child interaction (Table D-26), daily reading (Table D-27), daily number use (Table D-28), participation in unorganized sports (Table D-30), or participation in lessons in the arts (Table D-32).

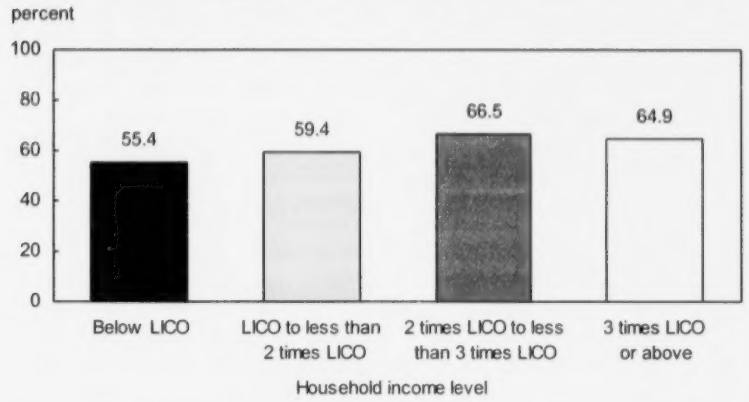
Household income level. Household income level was a significant predictor of all seven home environment variables. In almost all cases, lower household income was associated with lower levels of parental involvement and lower participation in activities by the child. One of the strongest findings here was the link between household income and daily reading to the child (Figure 20): daily reading increased with increasing income levels. For both participation in organized sports and participation in lessons in physical activities, a similar pattern appeared (Figure 21), with significant differences found between all levels of income. Income differences also appeared for participation in unorganized sports (Figure 22). Participation in lessons in the arts was low for children at all income levels, with some income level differences appearing (Table D-32).

Figure 19
Percent of girls and boys who participated in organized sports or lessons in physical activities at least weekly



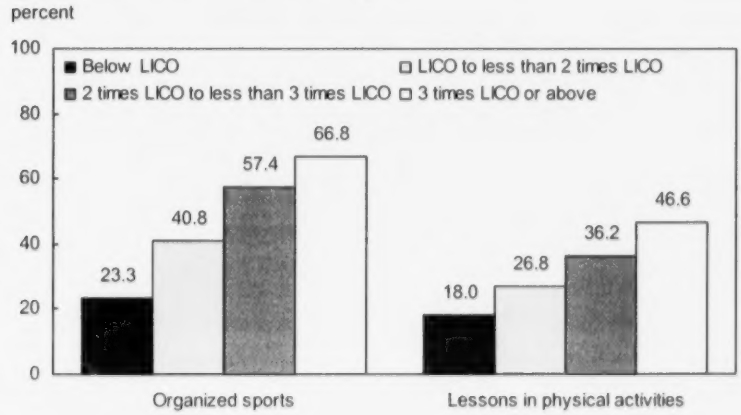
Source: Statistics Canada: National Longitudinal Survey of Children and Youth 2002/2003.

Figure 20
Percent of children at four income levels who were read to daily at age 5



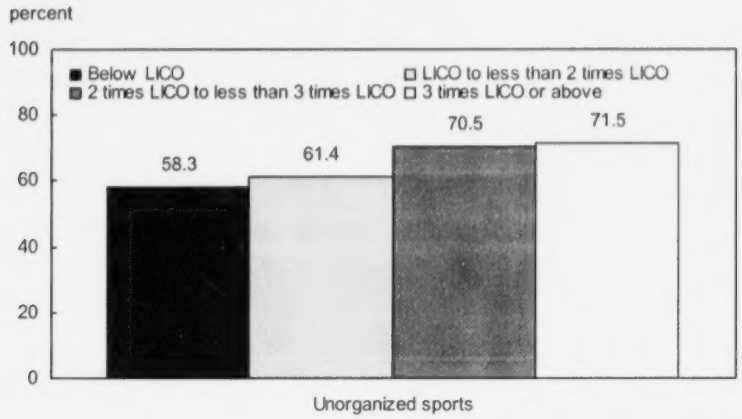
Note: LICO refers to the low income cut-off.
Source: Statistics Canada: National Longitudinal Survey of Children and Youth 2002/2003.

Figure 21
Percent of children at four income levels who participated in organized sports or lessons in physical activities at least weekly



Note: LICO refers to the low income cut-off.
Source: Statistics Canada: National Longitudinal Survey of Children and Youth 2002/2003.

Figure 22
Percent of children at four income levels who participated in unorganized sports at least weekly



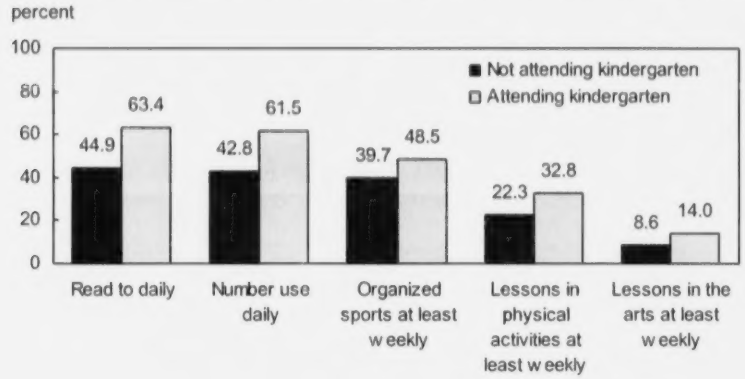
Note: LICO refers to the low income cut-off.
Source: Statistics Canada: National Longitudinal Survey of Children and Youth 2002/2003.

Parent education level and family structure. As shown in the tables (Table D-26 to D-32), parent education level and family structure presented many, though not all, of the same patterns as household income level. Lower parent education level and one-parent family structure tended to be associated with lower levels of parental involvement and lower participation in activities by the child.

Country of birth of parent. Country of birth of the reporting parent was linked to several home environment variables (Table D-26 to D-32). Children with parents born outside Canada had lower scores for positive parent-child interaction. A lower proportion of these children were involved in child activities weekly, including participation in organized sports, in unorganized sports, and in lessons in physical activities.

Kindergarten attendance. Differences appeared in almost all of the home environment variables between children who were not attending kindergarten and those who were (Figure 23). No differences appeared in positive interaction with the parent or in participation in unorganized sports. However, significantly lower percentages of children who did not attend kindergarten were read to daily and encouraged to use numbers daily than those who attended. Also, significantly lower percentages of children who were not attending kindergarten participated in organized sports, lessons in physical activities, and lessons in the arts. Most children who did not attend kindergarten resided in provinces where kindergarten was not provided, or where they did not meet the age cut-off for attendance, and therefore kindergarten attendance was not a choice for their parents. Although causality cannot be established here, this pattern suggests that attendance at school may lead parents to read and use numbers more with their children, and provide opportunities for other organized instruction and activities.

Figure 23
Percent of children involved in family and child activities by kindergarten attendance



Source: Statistics Canada: National Longitudinal Survey of Children and Youth 2002/2003.

Community size. Home environment variables varied between levels of community size in ways that were consistent with resources that might be available in those communities (Table D-26 to D-32). Notably, participation in organized sports and in lessons in both physical activities and the arts was lower in rural areas than in larger communities.

Province of residence. Provincial differences were found in several of the home environment variables (Table D-26 to D-32). Differences among the provinces in the percentage of children who were read to daily were particularly striking (Table D-27). A significantly higher percentage of children in Newfoundland and Labrador were read to daily than in any other province, while a significantly lower percentage were read to daily in Quebec. Other provincial differences are shown in the tables, notably in positive parent-child interaction (Table D-26). It should be noted that home environment variables such as reading to the child are based on parent report. Results could reflect differences in parent reporting tendencies rather than differences in actual behaviour.

Readiness to learn at school and home environment: interactions with household income level

Children in lower and higher income homes differed in several readiness to learn measures. Home environment variables that predicted readiness to learn also varied according to income. Child development researchers have suggested that differences in home environment variables between low and higher income children may in part account for various observed differences in outcomes between demographic groups. For example, maternal responsiveness, which has been linked to social skills, varies by socioeconomic status (e.g., Brooks-Gunn and Markman 2005; Connell and Prinz 2002; Hill 2001; Mashburn and Pianta 2006). Regular reading to the child, which varies by income level, is associated with vocabulary development and other cognitive outcomes (Sénéchal and LeFevre 2002; Whitehurst, Falco et al. 1998). In an effort to cast light on some of the environmental processes that may contribute to income differences in readiness to

learn among children, a series of more detailed analyses was undertaken. Analytical procedures are described in Appendix C. The question asked was, are differences in readiness to learn measures between children with different household income levels partly accounted for by differences in home environment variables for these groups? A summary of findings appears in Table 2, and they are discussed briefly below.

Table 2

Are differences in readiness to learn measures between children at different household income levels partly accounted for by differences in home environment variables between these groups?

	Readiness to learn measure			
Home environment variable	Receptive vocabulary score	Communi-cation skill score	Number knowledge score	Copying and symbol use score
Positive parent-child interaction	...	Yes	...	...
Daily reading	Yes	...	Yes	...
Participation in organized sports	Yes	Yes	No[1]	Yes
Lessons in physical activities	Yes	Yes	No[1]	Yes
Lessons in the arts	...	...	...	Yes

... not applicable

1. Significant interaction between income and home environment variable explained in the text.

As with all correlational data, links found among demographic variables, home environment variables, and readiness to learn measures do not imply causality. While the home environment variable may have resulted in the readiness to learn measure, it is also possible that the readiness to learn measure affected the home environment variable. For example, being read to regularly may produce a higher vocabulary in a child, or if a child has a high receptive vocabulary level, that may encourage the parent to read to the child more. On the other hand, an underlying factor that was not considered in this analysis could explain both the home environment variable and the readiness to learn measure, and it may be linked to the demographic variable as well. However, some of the relationships found here among income levels, home environment variables, and readiness to learn measures are consistent with studies in the research literature reported earlier.

Differences between children with different household income levels. Receptive vocabulary score, communication skill score, number knowledge score, and copying and symbol use score were all predicted by various home environment variables and by household income level, which also predicted the home environment variables. To determine whether the home environment variables partly accounted for differences between income levels on these readiness to learn measures, regression analyses were performed following the procedures described in Appendix C. The results of the regression analyses appear in Table D-33 to D-42. The results suggested that differences in the readiness to learn measures between income levels could be

partly accounted for by some, though not all, of the home environment variables. In particular, differences in receptive vocabulary score between lower and higher income children were partly accounted for by daily reading to the child, participation in organized sports, and participation in lessons in physical activities (Table D-33 to D-35). Differences in communication skill score between lower and higher income children were partly accounted for by positive parent-child interaction, participation in organized sports, and lessons in physical activities (Table D-36 to D-38). Also, income level differences in copying and symbol use score were partly accounted for by participation in organized sports, lessons in physical activities, and lessons in the arts. (Table D-39 to D-41). Differences in number knowledge score between lower and higher income children were partly accounted for by daily reading to the child (Table D-42).

These findings can all be interpreted in the same way: whether children were living in low income or higher income households, daily reading, high positive parent-child interaction, participation in organized sports, lessons in physical activities, and lessons in the arts were linked with higher scores on readiness to learn measures. However, the fact that the lower income children were less likely to experience the home environment factor may help to explain the difference in readiness to learn scores between the income levels.

Results for number knowledge score and participation in organized sports and physical activities were more complex, because a significant interaction term was found in the regression analyses between income level and both organized sports and lessons in physical activities. In order to study number knowledge score in more detail, mean comparisons were used. These analyses found significant differences between those who did and did not participate in organized sports for the lower three household income levels, but no such difference for the highest income level (Table D-43). Similarly, mean comparisons found significant differences between those who did and did not participate in lessons in physical activities for the lower two income levels, but not for the higher two levels (Table D-44). In other words, for lower income children participation in organized sports and physical activities was linked with higher number knowledge scores, but this was not the case for the higher income children, whose scores were high regardless of participation.

Readiness to learn at school and early childhood education activities

A separate set of analyses was undertaken to look at possible links between early childhood education activities at age 3 and readiness to learn measures at age 5. This age 3 variable was strongly linked to household income (Table D-45). The higher the income level the higher the percentage of children who participated in one or more early childhood education activities. For this reason, the analysis of early childhood education activity was undertaken separately for the four household income levels. Because early childhood activity participation was not associated with the sex of the child (Table D-45), separate analyses were not undertaken for girls and boys. The means of all continuous readiness to learn measures at age 5 were compared for children who did and did not participate in early childhood education activities at age 3, and the categorical readiness to learn measures were cross-tabulated with participation, to determine whether there were important differences in readiness to learn.

The percentages and standard errors of all readiness to learn measures by number of early childhood education activities and household income level are presented in Table D-46 to D-56. An overview of the findings is presented below.

Participation in early childhood education activities at age 3 was linked to some of the language, academic skill, and social competence variables at age 5 for one or more of the four income levels. Children in the middle two household income levels who participated in early childhood education activities had higher receptive vocabulary scores than those who did not participate (Table D-46). No such difference appeared for the lowest and highest income levels. Communication skill score did not vary by participation (Table D-47), but number knowledge scores were higher for children in the highest household income level who did participate in early childhood education activities than for those who did not (Table D-48). No differences were found for children in the other household income levels. Copying and symbol use did not differ according to early childhood education participation at any income level (Table D-49), nor did any of the self-regulation of learning measures (attention score, work effort score, or curiosity, Table D-50 to D-52) or self-control of behaviour (Table D-53). Children in the second lowest household income level who participated in early childhood education activities were rated as higher in cooperative play than those who did not participate (Table D-54). No differences were found for children at other household income levels. No differences appeared between income levels for independence in dressing (Table D-55), or independence in cleanliness (Table D-56). In summary, it was found that within some income levels, participation in early childhood education activities at age 3 was associated with higher scores in some measures of readiness to learn two years later, at age 5.

Readiness to learn at school: looking back to age 3

A series of analyses that looked back in time was conducted in order to determine whether the differences in readiness to learn that were found at age 5 between girls and boys, and between children with different household income levels, were already apparent two years earlier. Eight measures within four of the readiness to learn domains were available for the children when they were 3-year-olds. These included scores for communication skill (within the language and communication skill domain); attention, work effort, and curiosity (within the self-regulation of learning domain); self-control of behaviour (within the self-control of behaviour domain); and cooperative play, independence in dressing, and independence in cleanliness (within the social skill and competence domain). Readiness to learn measures at age 3 were compared between girls and boys and between household income levels. Linear regression analyses for continuous variables, or 3-way cross-tabulation analyses for categorical variables, were used to assess interactions between age 3 measures and demographic variables on the age 5 measures. In the absence of interactions, change between age 3 and age 5 was compared between girls and boys and between income levels, in order to discover whether differences between demographic groups increased, decreased or stayed the same over the preschool years.

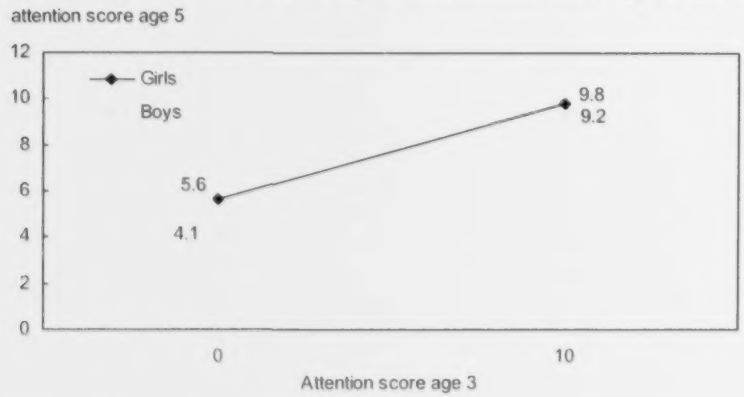
The mean scores and percentages at age 3 and the change scores and percentages between age 3 and age 5 are presented in Table D-57 to D-68. An overview of the findings is presented below.

Communication skill score. Girls had higher communication skill scores than boys at age 5 (Table D-5). This difference was already evident at age 3, when girls also scored significantly higher than boys (Table D-57). Girls and boys increased by the same amount over the two year period (Figure 1). These findings indicate that the differences in communication skill score at age 5 had their origins at least two years earlier.

Children at lower household income levels had lower communication skill scores than children at higher household income levels at age 5 (Table D-5). This trend was already apparent at age 3, when the scores for children at the lowest two household income levels were significantly lower than for those at the higher levels (Table D-57). Children in the lowest income category tended to show a somewhat greater increase in communication skill score than those in the other income categories, although these differences were not statistically significant (Figure 1). These findings suggest that income differences in communication skill score among 5-year-olds emerged before the age of 3.

Attention score. Girls scored higher than boys in attention at age 5 (Table D-8), but this difference was not present at age 3, when the scores for girls and boys were similar (Table D-58). Attention score did not change overall between age 3 and age 5. Over the two-year period girls showed a significantly greater increase in attention score than boys, who in fact declined slightly in mean score (Figure 3). However, the linear regression analysis indicated a significant interaction between sex of the child and attention score at age 3 (Figure 24): girls and boys who scored low at age 3 differed more in attention at age 5 than did girls and boys who scored high at age 3. These findings indicate that the attention score differences seen at age 5 between girls and boys emerged after the age of 3, due to an increase in attention on the part of girls, especially a greater increase on the part of girls at the lower end of the attention score distribution at age 3.

Figure 24
Regression of attention score age 5 on attention score age 3 and sex of child: interaction



Source: Statistics Canada: National Longitudinal Survey of Children and Youth 2002/2003.

At age 5, children at the lowest income level scored lower than those at higher levels in attention (Table D-8). These differences were already apparent and significant at age 3, when the score for children in the lowest income level was significantly lower than the scores for the highest two

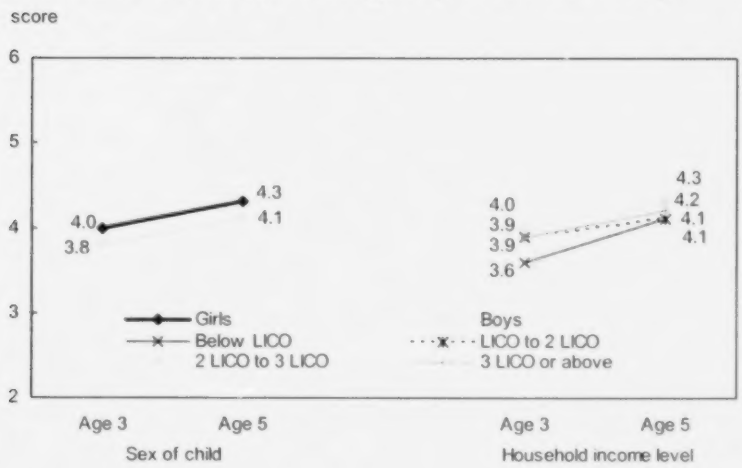
income levels (Table D-58). Attention score did not change significantly between age 3 and age 5 for any of the income levels (Figure 3). These findings suggest that differences in attention score at age 5 between children at the lowest household income level and other children emerged before the age of 3.

Work effort score. At age 5, no difference was found between girls and boys in work effort score (Table D-9). The situation was the same at age 3, when girls and boys had similar scores (Table D-59). Work effort increased an equivalent amount for girls and boys over the two-year period (Figure 25). These findings suggest that if girls and boys ever differed in this characteristic, the difference had disappeared by age 3.

At age 5, there were no differences in work effort score between children at different household income levels (Table D-9). This was not the case at age 3, when children at the lowest income level scored significantly lower in work effort than those at the second highest income level (Table D-59). Children in the lowest household income level showed the largest increase in work effort score between age 3 and age 5 (Figure 25). These findings suggest that differences in work effort score among household income levels emerged before the age of 3, but that the differences disappeared before the age of 5, possibly due to an increase on the part of children in the lowest household income level.

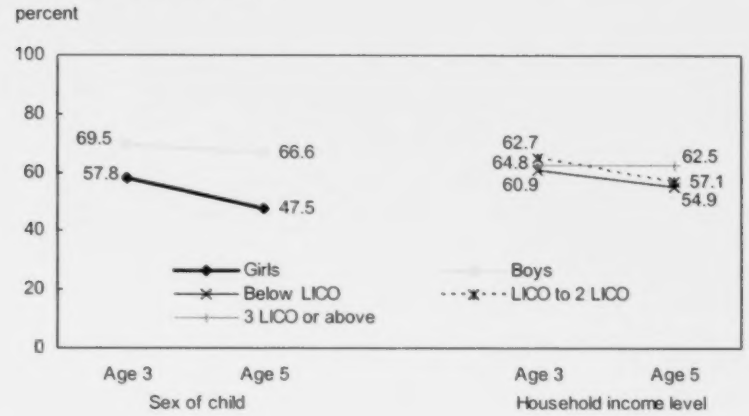
Curiosity level. At age 5, a higher percentage of boys than girls were reported to be high in curiosity (Table D-10). The situation was the same at age 3, with boys rated higher than girls (Table D-60). Curiosity decreased overall between age 3 and age 5, but curiosity decreased more for girls than for boys over the two-year period (Figure 26). An interaction was found between sex of the child and curiosity level at age 3 (Figure 4, Table D-61). Girls and boys who were not

Figure 25
Work effort score at age 3 and age 5 by sex of child and by household income level



Notes: Score of 2 corresponds to the lower 5th percentile of the work effort score distribution.
LICO refers to the low income cut-off.
Source: Statistics Canada: National Longitudinal Survey of Children and Youth 2002/2003.

Figure 26
Percent of children who were high in curiosity at age 3 and age 5 by sex of child and by household income level



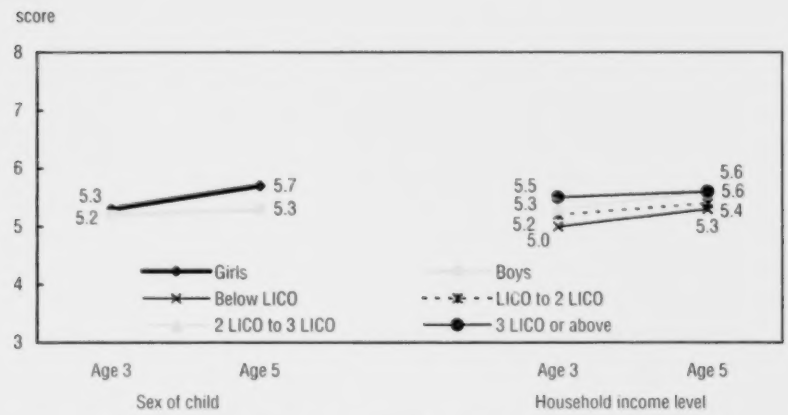
Notes: Three of the four household income levels are shown in the figure, for clarity of presentation.
LICO refers to the low income cut-off. Slight inconsistencies between this figure and Table D-10 are due to a small number of cases where the measure was not available at both ages.
Source: Statistics Canada: National Longitudinal Survey of Children and Youth 2002/2003.

high in curiosity at age 3 differed less at age 5 than did girls and boys who were high in curiosity at age 3. These findings indicate that differences in curiosity level at age 5 appeared before the age of 3, but that the difference increased over the two-year period, partly as a result of larger declines in curiosity levels on the part of girls, especially girls who were rated high at age 3.

At age 5, there were no differences in curiosity level between children at different household income levels (Table D-10). The situation was the same at age 3, when no differences appeared by income (Figure 26, Table D-60). These findings suggest no link between household income level and curiosity by age 3, and that no stable link developed later.

Self-control of behaviour score. Girls scored higher than boys in self-control of behaviour score at age 5 (Table D-11), but not at age 3 when their scores were about the same (Table D-62). The increase in self-control of behaviour score over the two-year period was significantly greater for girls than for boys (Figure 27). These findings indicate that the self-control of behaviour score differences seen at age 5 between girls and boys emerged after the age of 3, due to an increase on the part of girls.

Figure 27
Self-control of behaviour score at age 3 and age 5 by sex of child and by household income level



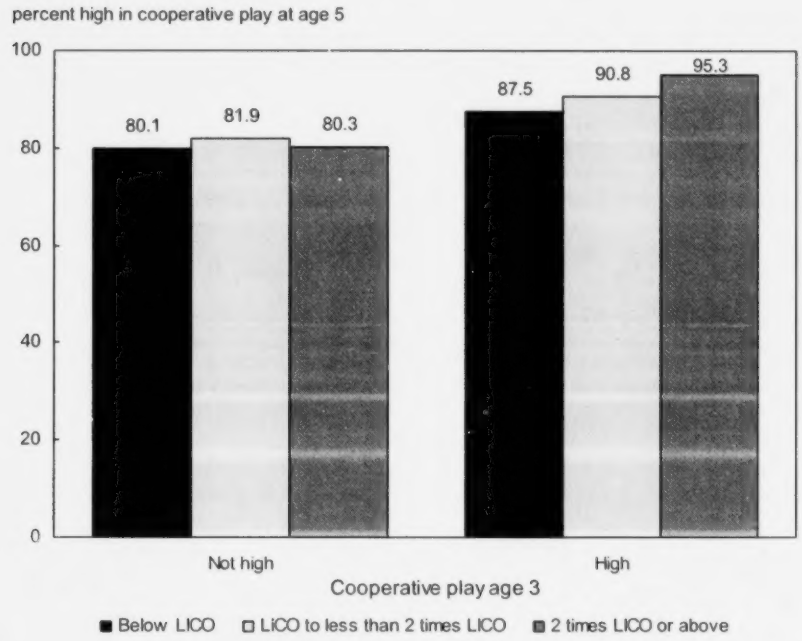
Notes: Score of 3 corresponds to the lower 5th percentile of the self-control of behaviour score distribution. LICO refers to the low income cut-off.
Source: Statistics Canada: National Longitudinal Survey of Children and Youth 2002/2003.

At age 5, children at different household income levels did not differ in self-control of behaviour (Table D-11), but this was not the case at age 3, when those at the lowest income level scored significantly lower in this variable than those at the highest income level (Table D-62). Self-control of behaviour score increased from age 3 to age 5 for children at all household income levels (Figure 27). As was found earlier for the work effort score, these findings indicate that differences in self-control of behaviour among income levels appeared before the age of 3, but that the differences decreased over the next two years.

Cooperative play. At age 5, no differences appeared in cooperative play between girls and boys (Table D-12), and this situation was also found at age 3 (Table D-63). Cooperative play increased somewhat overall for both sexes, indicating that the similarity between girls and boys existed before age 3, and was stable over the preschool years from age 3 to age 5.

At age 5, children in lower income households were rated lower in cooperative play than those in higher income households (Table D-12). A similar but non-significant pattern appeared at age 3 (Table D-63), and an interaction was found between income level and cooperative play at age 3: among children who were not high in cooperative play at age 3, there were no income differences in their cooperative play level at age 5 (Figure 28, Table D-64). For those who were high in cooperative play at age 3, more of the higher income children were still high in cooperative play by age 5 than lower income children. These findings indicate that while differences in cooperative play among income groups were small at age 3, the differences increased over the two-year period, partly because more of the higher income than lower income children remained high in cooperative play.

Figure 28
Percent of children at three income levels who were high in cooperative play at age 5 by cooperative play at age 3: interaction



Note: LICO refers to the low income cut-off. The two highest income levels have been combined in this figure.
Source: Statistics Canada: National Longitudinal Survey of Children and Youth 2002/2003.

Independence in dressing. A higher percentage of girls than boys were reported to be high in independence in dressing at age 5 (Table D-13). This pattern also appeared at age 3, with more girls than boys being rated as high (Table D-65). Independence in dressing increased overall, with boys increasing more than girls. An interaction was found between sex of the child and independence in dressing at age 3: For those who were not high in independence in dressing at age 3, no difference appeared between girls and boys at age 5, but for those who were high at age 3, more girls than boys remained high at age 5 (Figure 29, Table D-66). These findings suggest that girls were already more independent than boys at age 3, but that the difference decreased over the two-year period, mostly because of increases among those boys who were low in independence at age 3.

For household income level, no differences appeared in independence in dressing either at age 5 (Table D-13) or at age 3 (Table D-65). These findings indicate that the lack of link between household income level and independence in dressing existed before age 3, and that it remained stable over the two-year period.

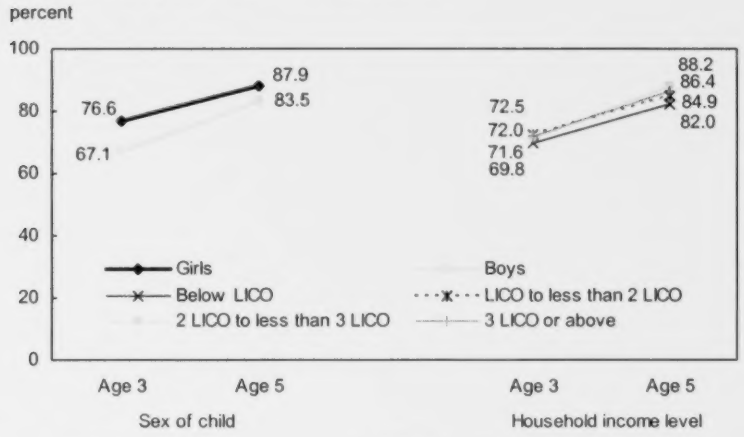
Figure 29
Percent of girls and boys who were high in independence in dressing at age 5 by independence in dressing at age 3: interaction

Source: Statistics Canada: National Longitudinal Survey of Children and Youth 2002/2003.

Independence in cleanliness. No differences were found between girls and boys in independence in cleanliness at age 5 (Table D-14). This was not the case at age 3, when more girls than boys were rated as high (Table D-67). Independence in cleanliness increased overall, with boys increasing slightly more than girls (Figure 30). An interaction was found between sex of the child and independence in cleanliness at age 3: for those who were not high in independence in cleanliness at age 3, no difference appeared between girls and boys at age 5, but for those who were high at age 3, more girls than boys remained high (Figure 31, Table D-68). These findings suggest that girls and boys were similar in independence in cleanliness at age 3, but that a difference appeared over the two-year period, because more girls than boys who were rated high in this behaviour at age 3 remained high at age 5.

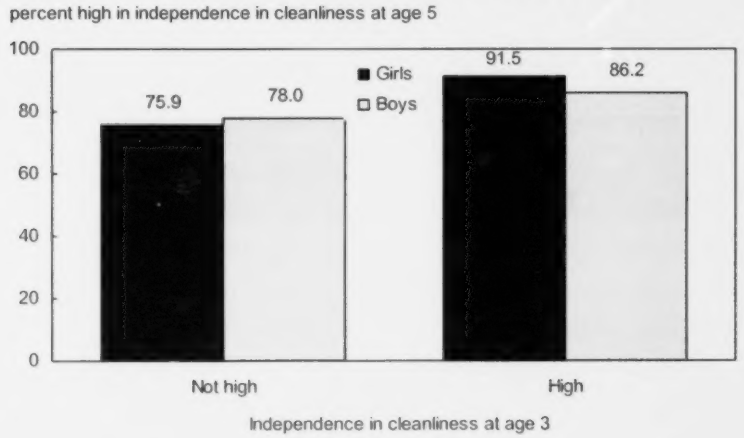
For household income level, no differences in independence in cleanliness appeared at age 5 or two years earlier at age 3. This suggests that by age 3, children were the same in this behaviour regardless of their household income level, and remained so over the two-year period.

Figure 30
Percent of children who were high in independence in cleanliness at age 3 and age 5 by sex of child and by household income level



Notes: LICO refers to the low income cut-off. Slight inconsistencies between this figure and Table D-14 are due to a small number of cases where the measure was not available at both ages.
Source: Statistics Canada: National Longitudinal Survey of Children and Youth 2002/2003.

Figure 31
Percent of girls and boys who were high in independence in cleanliness at age 5 by independence in cleanliness at age 3: interaction



Source: Statistics Canada: National Longitudinal Survey of Children and Youth 2002/2003.

5. Summary and conclusions

The purpose of this report was to provide an overview of readiness to learn among Canadian 5-year-old children. The analyses and results reported above have provided answers to the research questions that were under investigation. A summary of the results that were relevant to each of the questions follows.

Are there differences in readiness to learn between demographic groups?

Girls and boys entered school with equivalent abilities in several areas. They did not differ in receptive vocabulary or in number knowledge, and they were similar in work effort, cooperative play, and independence in cleanliness. However, they differed considerably in several dimensions of readiness to learn. Compared to boys, girls entered school with better communication skills and stronger abilities in copying and symbol use. They scored higher in attention and in self-control of impulsive behaviour, and were rated as higher in independence in dressing. On only one measure were boys rated above girls, and that was in curiosity level.

Children from lower income households did not do as well as those from more affluent households in many of the readiness to learn dimensions. This was true for receptive vocabulary, communication skill, number knowledge, copying and symbol use, attention, and cooperative play. However, no differences were detected between income levels in work effort, curiosity level, self-control of behaviour, independence in dressing, or independence in cleanliness.

Trends for children whose parents had low education levels and for those living in one-parent households were similar to the trends for lower income groups, in part because lower income levels are associated with lower parent education levels and one-parent family structures.

Do home environment variables predict readiness to learn, and if so, do they explain differences between children at different income levels?

Important links were found between readiness to learn measures and several aspects of the home environments of children. Children with high levels of positive interaction with their parents tended to have higher receptive vocabulary scores and higher communication skill scores than others, and to be rated higher in both curiosity and cooperative play. Children who were read to daily did better in receptive vocabulary and number knowledge than those who were not read to daily. Participation in organized sports and in lessons in physical activities were linked to several readiness to learn measures, including receptive vocabulary, communication skill, number knowledge, and copying and symbol use. Participation in lessons in the arts was linked to number knowledge and to copying and symbol use. Finally, children who participated at least weekly in unorganized sports were rated higher in cooperative play than other children.

Some of these relationships between readiness to learn measures and aspects of the home environment may contribute to differences in readiness to learn between children from households with different income levels. As with all correlational data, links among the demographic variables, the home environment variables, and readiness to learn measures do not

imply a cause-and-effect relationship. However, some of the links found here are consistent with studies reported elsewhere in the research literature.

As an example, it was found that differences in receptive vocabulary between children from low income households and those from more affluent households may be partly accounted for by differences in how often children were read to. Children in low income households who were read to daily had higher scores in vocabulary than children in low income households who were not read to, just as higher income children did. However, they were less likely to experience daily reading than higher income children. This may help to account for the low vocabulary scores of the lower income children relative to the children from more affluent families.

Other differences between income groups were examined in the same way. Differences in receptive vocabulary score between lower and higher income children were partly accounted for by participation in organized sports and physical activities. Differences in communication skill score between lower and higher income children were partly accounted for by positive parent-child interaction, and by participation in organized sports and physical activities. Differences in number knowledge score between lower and higher income children were in part accounted for by daily reading to the child. For lower income children, number knowledge was predicted by participation in organized sports and lessons in physical activities. This was not the case for children from more affluent households who showed no differences between those who did and did not participate. For copying and symbol use score, participation in organized sports, lessons in physical activities, and lessons in the arts partly accounted for income level differences.

These findings can all be interpreted in the same way: whether children were living in low income or higher income households, daily reading, high positive parent-child interaction, participation in organized sports, lessons in physical activities, and lessons in the arts were linked with higher scores on readiness to learn measures. However, the fact that the lower income children were less likely to experience the home environment factor may help to explain the difference in readiness to learn scores between the income levels.

When do differences in readiness to learn measures between demographic groups develop?

This report looked back two years to see whether differences in readiness to learn between girls and boys and between lower and higher income level children already existed at age 3, or whether these differences emerged over the preschool period from age 3 to age 5. As shown in Table 3, the clear differences found at age 5 between girls and boys in communication skill and independence in dressing were already evident at age 3, with girls ranking higher than boys on both of these measures. Similarly, the difference in curiosity favouring boys was already evident at age 3. On the other hand, differences in attention and in self-control of behaviour favouring girls were not apparent at age 3, but emerged over the two-year period. A difference in independence in cleanliness was found at age 3, favouring girls, but this difference had disappeared by age 5. In work effort and cooperative play, girls and boys were similar at both ages.

Table 3

Differences in readiness to learn measures between girls and boys at age 3 and age 5, and change in the differences

	Difference between girls and boys		
Readiness to learn measure	**Age 3**	**Age 5**	**Change in difference**
Communication skill	girls higher	girls higher	difference remained
Attention	no difference	girls higher	difference appeared
Work effort	no difference	no difference	no change
Curiosity	boys higher	boys higher	difference remained
Self-control of behaviour	no difference	girls higher	difference appeared
Cooperative play	no difference	no difference	no change
Independence in dressing	girls higher	girls higher	difference remained
Independence in cleanliness	girls higher	no difference	difference disappeared

Source: Statistics Canada: National Longitudinal Survey of Children and Youth, 2002/2003.

Table 4 shows differences in readiness to learn measures and changes in those differences from age 3 to age 5 according to the income level of children's households. The clear differences found at age 5 in communication skill and attention favouring children from more affluent households were already apparent at age 3. In contrast, the difference found in cooperative play at age 5 was not in evidence at age 3, but appeared over the two-year period. Affluent children ranked higher than less affluent children in work effort and self-control of behaviour at age 3, but these differences had disappeared by age 5. The lack of difference between income levels in curiosity, independence in dressing, and independence in cleanliness existed at both age 3 and age 5.

Table 4

Differences in readiness to learn measures between children from lower income households and children from more affluent households at age 3 and age 5, and change in the differences

	Difference between children from lower income and more affluent households		
Readiness to learn measure	**Age 3**	**Age 5**	**Change in difference**
Communication skill	affluent higher	affluent higher	difference remained
Attention	affluent higher	affluent higher	difference remained
Work effort	affluent higher	no difference	difference disappeared
Curiosity	no difference	no difference	no change
Self-control of behaviour	affluent higher	no difference	difference disappeared
Cooperative play	no difference	affluent higher	difference appeared
Independence in dressing	no difference	no difference	no change
Independence in cleanliness	no difference	no difference	no change

Source: Statistics Canada: National Longitudinal Survey of Children and Youth, 2002/2003.

Summary

This report provides an overview of Canadian children as they enter school as 5-year-olds. It looks at the collection of abilities, behaviours and attitudes that they bring with them, attributes that are important for early school achievement. The report shows that children vary on some dimensions of readiness to learn at school, according to their sex, their family characteristics, their background and their home environment and experiences. It also shows that some of the differences in readiness to learn may already be evident two years earlier, when the children were 3 years old. Finally, the report indicates factors in the home environment that may contribute to differences among different economic groups. The report adds to what we know about readiness to learn. It provides information that may be useful for policy analysts, teachers, researchers, and parents themselves as they work toward maximizing the potential of preschool children everywhere.

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Appendix A. The National Longitudinal Survey of Children and Youth

The National Longitudinal Survey of Children and Youth (NLSCY) is a long-term study of Canadian children that follows their development from birth to early adulthood. The NLSCY began in 1994, and is conducted by Statistics Canada. The survey is sponsored by Human Resources and Social Development Canada. The survey is designed to collect information about factors influencing the social, emotional and behavioural development of children, and to monitor the impact of these factors on their development over time. The survey covers a broad range of topics including health, physical development, learning, behaviour, and social environment (family, friends, schools and communities).

Survey design. The NLSCY sample frame in the first cycle of the survey, in 1994/1995, was based on the Labour Force Survey (LFS), a monthly survey of households in Canada conducted by Statistics Canada. Households with children aged 0 to 11 years were selected from the LFS in 1994 to participate in the NLSCY. Of 26,000 eligible households, 23,000 responded.

The first cycle of the NLSCY was conducted in 1994 and early 1995. The longitudinal cohort from that cycle has been monitored every two years since then, with data collection taking place in 1994/1995, 1996/1997, 1998/1999, 2000/2001, 2002/2003. New panels of children have been added to the survey each year. For information about changes to the sample frame over that time, the reader is referred to the Microdata User Guide for cycle 5 (Statistics Canada, n.d.b).

The present sample. The sample of children studied here includes 5-year-old children in the third longitudinal cohort of the NLSCY. These children were born between April and December in 1997. They were 5 years old as of December 31, 2002, during the cycle 5 collection phase. At the time of interview, they ranged from 57 to 65 months old, with a small number being slightly older. Of the 4,916 children born in 1997 who were recruited in cycle 3, 3,923 responded in cycle 5, for a retention rate of 79.8%. These 3,923 children were included in the present analysis. Applying the cross-sectional survey design weights indicates that these children represented around 360,000 5-year-old children in the Canadian population. Note that because of the sample selection procedure, no children who were born in the first four months of the year are included in the study; therefore, conclusions apply to a population of 5-year-olds that is relatively young.

Partial non-response. Response rates for variables that were provided by the reporting parent were all over 95%. These variables included all child and family characteristics, all readiness to learn measures that were not direct measures, and all home environment variables. Because non-response was so low for these variables, its effect on findings would be small, and it was ignored in the analyses.

Direct measures used in this report included the Peabody Picture Vocabulary Test – Revised (PPVT-R; receptive vocabulary score), the Number Knowledge Assessment (number knowledge score), and Who Am I? (copying and symbol use score). Response rates for the direct measures were lower than for parent-reported measures, for various reasons. Response rates were:

Receptive vocabulary score	90.6%
Number knowledge score	90.7%
Copying and symbol use score	86.9%

A discussion of reasons for partial non-response and a detailed analysis of non-response for each of these measures is reported in the Microdata User Guide for cycle 5 (Statistics Canada, n.d.b, p. 110-114). The analysis found that response rates for the receptive vocabulary test depended on English or French language ability, province of residence, and education level of the reporting parent. Response rates for the number knowledge assessment and for the copying and symbol use test depended on province of residence. These trends must be taken into account when interpreting the findings in the present report.

Appendix B. Definitions

Demographic variables

Several child and family characteristics were included as predictor variables in the analyses. They included:

Sex of child
Female or male

Household income of child's home (see below for definition)
Below LICO
LICO to less than 2 times LICO
2 times LICO to less than 3 times LICO
3 times LICO or above

Education level of reporting parent
High school completion or less, or more than high school

Family structure
One-parent family or two-parent family

Country of birth of reporting parent
Not Canada or Canada

Kindergarten attendance of child
Not attending kindergarten or attending kindergarten

Community size
1. Rural
2. Population less than 30,000
3. Population 30,000 to less than 100,000
4. Population 100,000 to less than 500,000
5. Population 500,000 and over

Province of residence
Ten provinces

Household income status and low income cut-offs (LICO). Income status was measured using the income ratio variable in the data set, which is the ratio of household income to the LICO as reported by Statistics Canada for the size and location of the child's household. The following information on the income ratio variable was taken from the *Microdata User Guide* of the NLSCY for cycle 1 (Statistics Canada n.d.a).

> *NLSCY children can be classified as living in households of various income levels. An income ratio has been derived and assigned to each child record and can be used for analytical purposes to further understand the economic situation of the child. The*

> *Canada establishes what are known as the low-income cut-offs, which are derived by considering expenditure to income patterns observed in the most recent Family Expenditure Survey. These thresholds or values are calculated for different urban-size and family-size categories and are updated annually using the Consumer Price Index. The cut-offs that were derived for 1994 were used to calculate the NLSCY income ratio. The ratio was simply calculated to be the household income divided by the cut-off value (p.63-64).*

Similar procedures were used to calculate the NLSCY income ratio for 2002. Readers who require additional information on data quality issues related to the income ratio are referred to the *Microdata User Guide* for the NLSCY for cycle 1 or cycle 5 (Statistics Canada n.d.a, n.d.b).

Readiness to learn measures

Receptive vocabulary score. The measure of receptive vocabulary was the standard score on the Peabody Picture Vocabulary Test – Revised (PPVT-R). More information about the PPVT-R in the NLSCY may be found in the *Microdata User Guide* for the NLSCY for cycle 5, page 169-171 (Statistics Canada n.d.b).

Communication skill score. The communication skill score included responses to a set of six individual items. The Cronbach's alpha measure of internal reliability for this score was 0.63. Parents were asked:

1. How often does (CHILD): clearly convey HIS/HER needs?

2. When HE/SHE is paying attention, how often is (CHILD) able to carry out a simple instruction after hearing it only once?

3. If HE/SHE does not understand what someone has said, how often will (CHILD) ask for it to be repeated or explained?

4. How often does (CHILD) follow what is being talked about in a conversation, and stay on the same topic?

5. How often can (CHILD) be relied on to pass simple messages from one person to another without getting the message mixed up?

6. How often does (CHILD) clearly explain about things HE/SHE has seen or done so that you get a very good idea what happened?

Response options were: *never*, *sometimes*, and *often*. Responses were scored 0 for *never*, 1 for *sometimes*, and 2 for *often*. Possible scores ranged from 0 (low communication skill) to 12 (high communication skill).

Number knowledge score. The measure of number knowledge was the age-standardized score on the 22-question (30-item) Number Knowledge Assessment instrument. More information

about the Number Knowledge Assessment instrument in the NLSCY may be found in the *Microdata User Guide* for the NLSCY for cycle 5, page 172-173 (Statistics Canada n.d.b).

Copying and symbol use score. The measure of copying and symbol use was the standard score on *Who Am I?*, an instrument that evaluates the developmental level of young children (De Lemos 2002). More information about the copying and symbol use instrument in the NLSCY may be found in the *Microdata User Guide* for the NLSCY for cycle 5, page 173-175 (Statistics Canada n.d.b).

Attention score. The attention score included responses to a set of six individual items. The Cronbach's alpha measure of internal reliability for this score was 0.78. Parents were asked:

How often would you say that (CHILD):

1. *Can't sit still or is restless?*
2. *Is easily distracted, has trouble sticking to any activity?*
3. *Can't concentrate, can't pay attention for long?*
4. *Is inattentive?*
5. *Can not settle on anything for more than a few moments?*

Response options were: *never or not true*, *sometimes or somewhat true*, and *often or very true*. Responses were scored 2 for *never or not true*, 1 for *sometimes or somewhat true*, and 0 for *often or very true*.

6. *How often does (CHILD): listen well and pay attention? (reversed)*

Response options were: *never*, *sometimes*, and *often*. Responses were scored 0 for *never*, 1 for *sometimes*, and 2 for *often*.

Possible scores ranged from 0 (low attention score) to 12 (high attention score).

Work effort score. The work effort score included responses to a set of three individual items. The Cronbach's alpha measure of internal reliability for this score was 0.64. Parents were asked:

How often does (CHILD):

1. *Finish things HE/SHE starts?*
2. *Persist with solving a problem, even when things go wrong for a while?*
3. *Make an effort to do something, even if HE/SHE doesn't feel confident about it?*

Response options were: *never*, *sometimes*, and *often*. Responses were scored 0 for *never*, 1 for *sometimes*, and 2 for *often*. Possible scores ranged from 0 (low work effort score) to 6 (high work effort score).

Curiosity level. Curiosity level was based on the parent's response to the following question:

How often does (CHILD): Ask questions or take things apart to find out how they work?

Response options were: *never*, *sometimes*, and *often*. Curiosity level was analyzed as a two-level variable, not high curiosity (never and sometimes) and high curiosity (often).

Self-control of behaviour score. The self-control of behaviour score included responses to a set of four individual items. The Cronbach's alpha measure of internal reliability for this score was 0.64. Parents were asked:

How often would you say that (CHILD):

1. *Is impulsive, acts without thinking?*
2. *Has difficulty waiting for HIS/HER turn in games or groups?*

Response options were: *never or not true*, *sometimes or somewhat true*, and *often or very true*. Responses were scored 2 for *never or not true*, 1 for *sometimes or somewhat true*, and 0 for *often or very true*.

How often does (CHILD):

3. *Keep HIS/HER temper?*
4. *Show self-control?*

Response options were: *never*, *sometimes*, and *often*. Responses were scored 0 for *never*, 1 for *sometimes*, and 2 for *often*.

Possible scores ranged from 0 (low self-regulation of behaviour score) to 8 (high self-regulation of behaviour score).

Cooperative play level. Cooperative play level was based on the parent's response to the following question:

How often does (CHILD): Play cooperatively with other children?

Response options were: *never*, *sometimes*, and *often*. Cooperative play level was analyzed as a two-level variable, not high cooperative play (never and sometimes) and high cooperative play (often).

Independence in dressing. Independence in dressing was based on the parent's response to the following question:

How often does (CHILD): Show independence while dressing?

Response options were: *never*, *sometimes*, and *often*. Independence in dressing was analyzed as a two-level variable, not high independence in dressing (never and sometimes) and high independence in dressing play (often).

Independence in cleanliness. Independence in cleanliness was based on the parent's response to the following question:

How often does (CHILD): Show independence with washing and toileting?

Response options were: *never*, *sometimes*, and *often*. Independence in cleanliness was analyzed as a two-level variable, not high independence in cleanliness (never and sometimes) and high independence in cleanliness (often).

Home environment variables

Positive parent-child interaction

The two-level positive parent-child interaction score used was based on responses to a set of five individual items. The Cronbach's alpha measure of internal reliability for the 5-item score was 0.63. Parents were asked:

1. *How often do you praise (CHILD), by saying something like "Good for you!" or "What a nice thing you did!" or "That's good going!"?*

2. *How often do you and (CHILD) talk or play with each other, focusing attention on each other for five minutes or more, just for fun?*

3. *How often do you and (CHILD) laugh together?*

4. *How often do you do something special with (CHILD) that HE/SHE enjoys?*

5. *How often do you play sports, hobbies or games with (CHILD)?*

Response options were: *never*, *about once a week or less*, *a few times a week*, *one or two times a day*, and *many times each day*. Responses were scored from 0 for *never* to 4 for *many times each day*. Possible scores ranged from 0 to 20. Positive interaction was analyzed as a two-level variable, not high positive interaction score (at or below the 15th percentile score of 12) and high positive interaction score (above the 15th percentile score, that is, 13 or higher).

Daily reading to the child

Daily reading to the child was based on the parent's response to the following question:

How often do you (or your spouse): Read aloud to HIM/HER or listen to HIM/HER read or try to read?

Response options were: *rarely or never*, *a few times a month*, *once a week*, *a few times a week*, and *daily*. Responses were scored 0 for less than daily reading and 1 for daily reading.

Daily number use

Daily number use with the child was based on the parent's response to the following question:

How often do you (or your spouse): Encourage HIM/HER to use numbers in day to day activities (for example, counting cookies on a plate)?

Response options were: *rarely or never*, *a few times a month*, *once a week*, *a few times a week*, and *daily*. Responses were scored 0 for less than daily number use and 1 for daily number use.

Group activities

Parents were asked four questions about their child's group activities. Activities included: participation in organized sports, participation in unorganized sports, participation in lessons in physical activities, and participation in lessons in the arts. Parents were asked:

In the past 12 months, outside of school hours, how often has (CHILD):

Taken part in sports with a coach or instructor (except dance, gymnastics, or martial arts)?

Taken part in unorganized sports or physical activities without a coach or instructor?

Taken lessons or instruction in other organized physical activities with a coach or instructor such as dance, gymnastics or martial arts?

Taken lessons or instruction in music, art or other non-sport activities?

Response options were: *most days, a few times a week, about once a week, about once a month,* and *almost never*. Responses were scored 0 for not weekly and 1 for at least weekly.

Early childhood education activities age 3

Parents were asked about their child's involvement in early childhood education activities at the age of 3. The question was:

Does (CHILD) attend the following programs or activities?

1. *Nursery school or preschool*
2. *Play group*
3. *Drop-in centre*
4. *Parent and child lessons or program*
5. *Library storytime or other reading program or book club?*

Response options were yes or no for these activities. Responses were scored 0 for no activity and 1 for one activity or more.

Appendix C. Data analysis

Coefficient of variation. The coefficient of variation (CV) is a relative measure of variability, that can be used to compare the quality of estimates. It is calculated by dividing the square root of the variance of the estimate, by the estimate itself. Note that the square root of the variance is also known as the **standard error**. Estimates with CVs of 16.5% or lower are considered to be of acceptable quality by Statistics Canada, and can be released without warning. Estimates with CVs in the range of 16.6% to 33.3% are of marginal quality, and should be accompanied with a warning about the relatively high levels of error. Estimates with CVs in excess of 33.3% are considered to be of unacceptable quality by Statistics Canada. Almost all CVs in the present report were in the acceptable range. The small number of estimates in the marginal range have been flagged in the tables.

Bootstrap weights for variance estimation. The following information was taken from the *Microdata User Guide* of the NLSCY for cycle 5 (Statistics Canada, n.d.b).

> *It would be difficult to derive an exact formula to calculate the sampling variance for the NLSCY due to the complex sample design, non-response adjustments, treatment of out-of-scope units, and the post-stratification. A very good way to approximate the sampling variance is to use the Bootstrap method. The idea behind the Bootstrap method is to select random sub-samples from the full sample in such a way that each of the sub-samples (or replicates) follows the same design as the full sample. The final weights for units in each replicate are recalculated following the same weighting steps used for the full sample.... These Bootstrap weights are used to calculate a population estimate for each replicate. The variance among the replicate estimates for a given characteristic is an estimate of the sampling variance of the full sample population estimate. For the NLSCY, a set of 1,000 Bootstrap weights is available. The sampling variance calculation using these 1,000 Bootstrap weights involves calculating the estimates with each of these 1,000 weights and then calculating the variance of these 1,000 estimates (p.166).*

The variances and standard errors of all estimates in the present study were calculated using the bootstrap weights that were developed by Statistics Canada for the 2002/2003 cross-sectional sample. Cross-sectional weights were used for the longitudinal analysis because the sample being studied was 5-year-old children in 2002/2003, and the analysis involved looking back at their status in 2000/2001 when they were 3-year-olds.

Statistical and substantive significance. Because of the large size of the sample under study, many statistics were statistically significant even though the effects were small. Unless noted otherwise, only effects that were both statistically and substantively significant as defined below are reported as significant in this paper. Standards of substantive significance were derived from those established by Cohen (1988).

Substantive significance. Unless noted otherwise, substantive effects were defined as:

1 percentage differences of 5 points or more
2 mean differences of 0.25 of a standard deviation or more
3 correlation coefficients of r=0.22 or greater (r^2=0.05)
4 Incremental R^2 of 0.01 (1%) or greater.

Statistical significance. Where nultiple comparisons were made within a particular predictor variable (e.g., household income level), the nominal significance level of p=0.05 was adjusted for the number of comparisons. Where single comparisons were made, a significance level of p=0.01 was used.

Descriptive statistics. In this report, descriptive statistics were presented on basic demographic variables for the sub-group under study. Intercorrelations among child and family characteristics, among readiness to learn measures, and among home environment measures were calculated using the cross-sectional sample design weights, with statistical significance of correlation coefficients being assessed with reference to the size of design effects.

Readiness to learn, home environment, and child and family characteristics. Means and percentages were reported for readiness to learn measures and home environment variables in 2002/2003 (and, where applicable, 2000/2001), by sex of the child, household income status, parent education level, family structure, country of birth of parent, kindergarten attendance, community size, and province of residence. Estimates of means and percentages were calculated using the 2002/2003 cross-sectional sample design weights, and the statistical significance of differences was tested using t-tests.

Readiness to learn and home environment. To determine whether there were important readiness to learn differences linked to home environment, means of the continuous readiness to learn measures were compared for the seven home environment variables, and the categorical readiness to learn measures were cross-tabulated with the home environment variables. Estimates of means and percentages were calculated using the cross-sectional sample design weights, and the statistical significance of differences was tested using t-tests.

Readiness to learn and home environment: interactions with household income level. To determine whether the demographic variable, household income level, had an indirect statistical effect on a continuous readiness to learn measure by way of a home environment variable, in addition to its direct statistical effect, linear regression analyses that were analogous to path analyses were performed. The purpose was to determine whether the home environment variable explained part of the difference in readiness to learn between lower and higher income level children. A two-stage approach was used. First, a linear regression procedure established whether the home environment variable accounted for at least 1% of the variance in the readiness to learn measure (i.e., R^2 => 0.01). If so, a linear regression procedure was undertaken to determine whether the demographic predictor and the home environment predictor had a combined effect on the readiness to learn measure. If both of the regression coefficients were significant, it was possible that the demographic variable, in addition to its direct effect, had an indirect effect on the readiness to learn measure, manifested through its effect on the home environment variable. If previous results showed that the demographic variable was significantly

linked with the home environment variable, this link, coupled with the regression results, would imply that the demographic variable had an indirect effect on the outcome variable through the home environment variable. The size of this indirect effect could not be estimated using this technique, but the direction of the effect would be known. This approach assumes that the direction of effect would be one-way, from the demographic variable to the home environment variable. An example of this analytical approach follows.

Example. Children from lower income households and from more affluent households differed significantly in the readiness to learn measure, communication skill score. To determine whether household income level had an indirect effect on communication skill score by way of participation in organized sports, a linear regression analysis was performed. Household income level and participation in organized sport were entered into a linear regression equation predicting communication skill score. The results of this analysis appear in Table D-37. The regression coefficients for participation in organized sports and household income level were both statistically significant, indicating that income had a direct effect on communication skill score, and that it could possibly have an indirect effect as well by way of participation in organized sports. An examination of earlier results (Table D-29) indicated a significant link between income and participation in organized sports, implying that household income level may have influenced communication skill score through the home environment variable.

Appendix D. Tables

Table D-1

Correlations between demographic variables for the study population

	INC	EDUC	FAMST	CNTRY	KINDER	COMM
SEX	0.01	-0.01	-0.01	0.03	-0.03	-0.02
INC	...	0.33[1]	0.36[1]	0.14	0.03	-0.08
EDUC	...	...	0.12	0.04	0.05	0.09
FAMST	...	...	...	-0.05	-0.02	0.04
CNTRY	...	...	...	...	-0.07	-0.33[1]
KINDER	...	...	...	...	...	0.07
COMM	...	...	...	...	...	...

1. Correlation coefficient differs significantly and substantively from 0.

Notes

SEX=Sex of child INC=Income level EDUC=Education of reporting parent
FAMST=Family structure CNTRY=Country of birth of reporting parent
KINDER=Kindergarten attendance COMM=Community size

Sample n ranged from 3,813 to 3,923.

Substantive correlation coefficients are defined as $r >= 0.22$ ($r^2 = 0.05$).

Source: Statistics Canada: National Longitudinal Survey of Children and Youth, 2002/2003.

Table D-2

Correlations between readiness to learn outcome measures

	COMM	NUMB	COPY	ATTEN	WORK	CURIO	SELFC	PLAY	DRESS	CLEAN
VOCAB	0.25[1]	0.40[1]	0.23[1]	0.13	0.08	0.02	0.07	0.10	0.03	0.09
COMM	...	0.24[1]	0.14	0.43[1]	0.36[1]	0.12	0.35[1]	0.27[1]	0.20	0.19
NUMB	...	...	0.41[1]	0.16	0.14	-0.00	0.13	0.07	0.04	0.02
COPY	...	...	...	0.19	0.15	-0.01	0.13	0.04	0.05	0.03
ATTEN	...	...	...	...	0.38[1]	-0.01	0.55[1]	0.21	0.13	0.10
WORK	...	...	...	...	...	0.15	0.38[1]	0.19	0.18	0.12
CURIO	...	...	...	...	...	...	-0.01	0.05	0.01	0.04
SELFC	...	...	...	...	...	...	...	0.23[1]	0.11	0.09
PLAY	...	...	...	...	...	...	...	...	0.09	0.10
DRESS	...	...	...	...	...	...	...	...	...	0.34[1]
CLEAN	...	...	...	...	...	...	...	...	...	...

1. Correlation coefficient differs significantly and substantively from 0.

Notes

VOCAB=Receptive vocabulary COMM=Communication skill NUMB=Number knowledge COPY=Copying and symbol use ATTEN=Attention WORK=Work effort CURIO=Curiosity SELFC=Self-control of behaviour PLAY=Cooperative play DRESS=Independence dressing CLEAN=Indepe

Sample n ranged from 3,377 to 3,558 for correlations with VOCAB, NUMB and COPY. For other correlations, sample n ranged from 3,826 to 3,884.

Substantive correlation coefficients are defined as $r <= 0.22$ ($r^2 = 0.05$).

Source: Statistics Canada: National Longitudinal Survey of Children and Youth, 2002/2003.

Table D-3

Correlations between family environment and child activity variables

	READ	NUMB	SPORTO	SPORTU	LESSPH	LESSAR	ECE3
POSINT	0.19	0.22[1]	0.06	0.13	0.10	0.08	0.12
READ	...	0.27[1]	0.11	0.05	0.12	0.10	0.18
NUMB	...	...	0.06	0.03	0.06	0.04	0.08
SPORTO	...	...	...	0.08	0.20	0.13	0.23[1]
SPORTU	...	...	...	...	0.08	0.05	0.06
LESSPH	...	...	...	...	...	0.13	0.17
LESSAR	...	...	...	...	...	...	0.14
ECE3	...	...	...	...	...	...	...

1. Correlation coefficient differs significantly and substantively from 0.

Notes

POSINT=Positive parent-child interaction READ=Daily reading NUMB=Daily number use SPORTO=Organized sports SPORTU=Unorganized sports LESSPH=Lessons in physical activities LESSAR=Lessons in the arts ECE3=Early childhood education activity age 3

Sample n ranged from 3,846 to 3,887.

Substantive correlation coefficients are defined as $r >= 0.22$ ($r^2 = 0.05$).

Source: Statistics Canada: National Longitudinal Survey of Children and Youth, 2002/2003.

Table D-4

Language and communication skill – Means and standard errors (SE) for receptive vocabulary score by child and family characteristics at age 5

	Receptive vocabulary score	
	Mean score	SE
Total (n=3,554)	101.5	0.38
Sex of child (n=3,554)		
Female	102.4	0.47
Male	100.5	0.56
Household income level (n=3,554)		
Below LICO (level 1)	93.6[1]	0.88
LICO to less than 2 times LICO (level 2)	99.7[1]	0.63
Two times LICO to less than 3 times LICO (level 3)	105.6	0.58
Three times LICO or above (level 4)	105.6	0.68
Parent education level (n=3,532)		
High school or less	97.2[2]	0.61
More than high school	103.6	0.43
Family structure (n=3,554)		
One-parent family	97.5[2]	0.90
Two-parent family	102.2	0.40
Country of birth of parent (n=3,494)		
Parent born outside Canada-language at home not English or French (level 1)	87.4[3]	1.42
Parent born outside Canada-language at home English or French (level 2)	102.4	1.07
Parent born in Canada (level 3)	103.3	0.40

1. Statistically significant and substantive differences between level 1 and levels 2, 3, 4; and between level 2 and levels 3, 4.
2. Statistically significant and substantive difference between levels.
3. Statistically significant and substantive differences between level 1 and level 2, 3.

Notes

Statistical significance: $p<0.01$ for differences between 2 levels of parent education level, family structure, and country of birth of parent; $p<0.008$ for differences among 4 levels of household income level (nominal significance level of $p<0.05$ adjusted for multiple comparisons).

Substantive differences are defined as mean differences of 0.25 of a standard deviation (0.25 SD) or more, as follows: for receptive vocabulary score at age 5, 0.25 SD=3.84.

Numbers vary due to missing data for some child and family characteristics.

LICO refers to the low income cut-off.

Source: Statistics Canada: National Longitudinal Survey of Children and Youth, 2002/2003.

Table D-4 continued

Language and communication skill – Means and standard errors (SE) for receptive vocabulary score by child and family characteristics at age 5

	Receptive vocabulary score	
	Mean score	SE
Kindergarten attendance (n=3,552)		
Not in kindergarten	100.1	1.13
In kindergarten	101.6	0.40
Community size (n=3,554)		
Rural (level 1)	101.7	1.09
Under 30,000 (level 2)	101.8	0.74
30,000 to under 100,000 (level 3)	100.8[1]	0.79
100,000 to under 500,000 (level 4)	104.3[1]	0.94
500,000 and over (level 5)	100.5	0.61
Province of residence (n=3,554)		
Newfoundland and Labrador	104.6[2]	1.28
Prince Edward Island	101.8	1.14
Nova Scotia	104.1	1.78
New Brunswick	100.2	1.09
Quebec	100.5	0.75
Ontario	101.7	0.62
Manitoba	98.3	1.51
Saskatchewan	100.6	1.28
Alberta	101.8	0.96
British Columbia	102.6	1.45

1. Statistically significant and substantive difference between levels 3 and 4; and between levels 4 and 5.
2. Statistically significant and substantive difference between N.L. and Man.. No other provincial differences were statistically significant at $p<0.001$.

Notes

Statistical significance: $p<0.005$ for differences among 5 levels of community size (nominal significance level of $p<0.05$ adjusted for multiple comparisons); $p<0.001$ for differences among 10 levels of province of residence (nominal significance level of $p<0.05$ adjusted for multiple comparisons).

Substantive differences are defined as mean differences of 0.25 of a standard deviation (0.25 SD) or more, as follows: for receptive vocabulary score at age 5, 0.25 SD=3.84.

Numbers vary due to missing data for some child and family characteristics.

Source: Statistics Canada: National Longitudinal Survey of Children and Youth, 2002/2003.

Table D-5

Language and communication skill – Means and standard errors (SE) for communication skill score by child and family characteristics at age 5

	Communication skill score	
	Mean score	**SE**
Total (n=3,863)	10.4	0.04
Sex of child (n=3,863)		
Female	10.6[1]	0.04
Male	10.2	0.05
Household income level (n=3,863)		
Below LICO (level 1)	9.9[2]	0.09
LICO to less than 2 times LICO (level 2)	10.3[2]	0.06
Two times LICO to less than 3 times LICO (level 3)	10.6	0.06
Three times LICO or above (level 4)	10.7	0.06
Parent education level (n=3,803)		
High school or less	10.1[1]	0.06
More than high school	10.6	0.04
Family structure (n=3,863)		
One-parent family	10.1	0.09
Two-parent family	10.5	0.04
Country of birth of parent (n=3,785)		
Parent born outside Canada	10.2	0.08
Parent born in Canada	10.5	0.04

1. Statistically significant and substantive difference between levels.

2. Statistically significant and substantive differences between level 1 and levels 3, 4; and between level 2 and level 4.

Notes

Statistical significance: $p<0.01$ for differences between 2 levels of sex of child and parent education level; $p<0.008$ for differences among 4 levels of household income level (nominal significance level of $p<0.05$ adjusted for multiple comparisons).

Substantive differences are defined as mean differences of 0.25 of a standard deviation (0.25 SD) or more, as follows: for communication skill score at age 5, 0.25 SD=0.41.

Numbers vary due to missing data for some child and family characteristics.

LICO refers to the low income cut-off.

Source: Statistics Canada: National Longitudinal Survey of Children and Youth, 2002/2003.

Table D-5 continued

Language and communication skill – Means and standard errors (SE) for communication skill score by child and family characteristics at age 5

	Communication skill score	
	Mean score	SE
Kindergarten attendance (n=3,789)		
Not in kindergarten	10.4	0.10
In kindergarten	10.4	0.04
Community size (n=3,863)		
Rural (level 1)	10.4	0.07
Under 30,000 (level 2)	10.6	0.08
30,000 to under 100,000 (level 3)	10.4	0.08
100,000 to under 500,000 (level 4)	10.4	0.10
500,000 and over (level 5)	10.3	0.05
Province of residence (n=3,863)		
Newfoundland and Labrador	10.6	0.08
Prince Edward Island	10.6	0.12
Nova Scotia	10.5	0.13
New Brunswick	10.4	0.14
Quebec	10.3	0.07
Ontario	10.5	0.06
Manitoba	10.4	0.11
Saskatchewan	10.2	0.12
Alberta	10.2	0.13
British Columbia	10.4	0.10

Notes

Numbers vary due to missing data for some child and family characteristics.

Source: Statistics Canada: National Longitudinal Survey of Children and Youth, 2002/2003.

Table D-6

Academic skill and cognitive ability – Means and standard errors (SE) for number knowledge score by child and family characteristics at age 5

	Number knowledge score	
	Mean score	**SE**
Total (n=3,560)	99.1	0.33
Sex of child (n=3,560)		
Female	99.5	0.43
Male	98.8	0.53
Household income level (n=3,560)		
Below LICO (level 1)	94.6[1]	0.74
LICO to less than 2 times LICO (level 2)	98.2[1]	0.52
Two times LICO to less than 3 times LICO (level 3)	100.7	0.54
Three times LICO or above (level 4)	102.5	0.71
Parent education level (n=3,537)		
High school or less	96.0[2]	0.53
More than high school	100.8	0.42
Family structure (n=3,560)		
One-parent family	95.9[2]	0.81
Two-parent family	99.7	0.35
Country of birth of parent (n=3,501)		
Parent born outside Canada	99.7	0.73
Parent born in Canada	99.0	0.36

1. Statistically significant and substantive differences between level 1 and levels 2, 3, 4; and between level 2 and level 4.

2. Statistically significant and substantive difference between levels.

Notes

Statistical significance: $p<0.01$ for differences between 2 levels of parent education level and family structure: $p<0.008$ for differences among 4 levels of household income level (nominal significance level of $p<0.05$ adjusted for multiple comparisons).

Substantive differences are defined as mean differences of 0.25 of a standard deviation (0.25 SD) or more, as follows: for number knowledge score at age 5, 0.25 SD=3.47.

Numbers vary due to missing data for some child and family characteristics.

LICO refers to the low income cut-off.

Source: Statistics Canada: National Longitudinal Survey of Children and Youth, 2002/2003.

Table D-6 continued

Academic skill and cognitive ability – Means and standard errors (SE) for number knowledge score by child and family characteristics at age 5

	Number knowledge score	
	Mean score	SE
Kindergarten attendance (n=3,558)		
Not in kindergarten	96.8	0.87
In kindergarten	99.4	0.35
Community size (n=3,560)		
Rural (level 1)	97.2	0.93
Under 30,000 (level 2)	99.0	0.75
30,000 to under 100,000 (level 3)	97.9	1.02
100,000 to under 500,000 (level 4)	99.8	1.01
500,000 and over (level 5)	99.7	0.47
Province of residence (n=3,560)		
Newfoundland and Labrador	101.0[1]	1.09
Prince Edward Island	100.1	1.32
Nova Scotia	98.4	1.72
New Brunswick	97.1[1]	1.11
Quebec	96.0[1]	0.58
Ontario	102.1[1]	0.61
Manitoba	98.2	1.51
Saskatchewan	97.5	1.43
Alberta	97.9	0.91
British Columbia	97.5	0.81

1. Statistically significant and substantive difference between N.L. and Que.; between N.B. and Ont.; between Que. and Ont.; between Ont. and Alta., B.C. No other provincial differences were statistically significant at $p<0.001$.

Notes

Statistical significance: $p<0.001$ for differences among 10 levels of province of residence (nominal significance level of $p<0.05$ adjusted for multiple comparisons).

Substantive differences are defined as mean differences of 0.25 of a standard deviation (0.25 SD) or more, as follows: for number knowledge score at age 5, 0.25 SD=3.47.

Numbers vary due to missing data for some child and family characteristics.

Source: Statistics Canada: National Longitudinal Survey of Children and Youth, 2002/2003.

Table D-7

Academic skill and cognitive ability – Means and standard errors (SE) for copying and symbol use score by child and family characteristics at age 5

	Copying and symbol use score	
	Mean score	SE
Total (n=3,410)	100.7	0.30
Sex of child (n=3,410)		
Female	104.3[1]	0.40
Male	97.2	0.48
Household income level (n=3,410)		
Below LICO (level 1)	96.5[2]	0.91
LICO to less than 2 times LICO (level 2)	100.1[2]	0.51
Two times LICO to less than 3 times LICO (level 3)	101.7	0.57
Three times LICO or above (level 4)	103.9	0.75
Parent education level (n=3,386)		
High school or less	97.7[1]	0.58
More than high school	102.3	0.39
Family structure (n=3,410)		
One-parent family	97.3[1]	0.84
Two-parent family	101.3	0.34
Country of birth of parent (n=3,352)		
Parent born outside Canada	105.4[1]	0.74
Parent born in Canada	99.6	0.34

1. Statistically significant and substantive difference between levels.

2. Statistically significant and substantive differences between level 1 and levels 2, 3, 4; and between level 2 and level 4.

Notes

Statistical significance: $p<0.01$ for differences between 2 levels of sex of child, parent education level, family structure, and country of birth of parent; $p<0.008$ for differences among 4 levels of household income level (nominal significance level of $p<0.05$ adjusted for multiple comparisons).

Substantive differences are defined as mean differences of 0.25 of a standard deviation (0.25 SD) or more, as follows: for copying and symbol use score at age 5, 0.25 SD=3.62.

Numbers vary due to missing data for some child and family characteristics.

LICO refers to the low income cut-off.

Source: Statistics Canada: National Longitudinal Survey of Children and Youth, 2002/2003.

Table D-7 continued

Academic skill and cognitive ability – Means and standard errors (SE) for copying and symbol use score by child and family characteristics at age 5

	Copying and symbol use score	
	Mean score	SE
Kindergarten attendance (n=3,408)		
Not in kindergarten	95.0[1]	0.83
In kindergarten	101.4	0.34
Community size (n=3,410)		
Rural (level 1)	98.0[2]	1.03
Under 30,000 (level 2)	98.7[2]	0.72
30,000 to under 100,000 (level 3)	97.5[2]	1.15
100,000 to under 500,000 (level 4)	100.4	0.83
500,000 and over (level 5)	103.4	0.51
Province of residence (n=3,410)		
Newfoundland and Labrador	102.6[3]	0.92
Prince Edward Island	99.4[3]	1.17
Nova Scotia	99.4[3]	0.96
New Brunswick	97.4[3]	1.00
Quebec	96.4[3]	0.55
Ontario	104.7[3]	0.56
Manitoba	98.4	0.99
Saskatchewan	95.6[3]	0.91
Alberta	97.4	0.95
British Columbia	101.1	0.86

1. Statistically significant and substantive difference between levels.

2. Statistically significant and substantive differences between level 1 and 5; between level 2 and 5; and between level 3 and 5.

3. Statistically significant and substantive differences between N.L. and N.B., Que., Sask., Alta.; between P.E.I. and Ont.; between N.S. and Ont.; between N.B. and Ont.; between Que. and Ont., B.C.; between Ont. and Man., Sask., Alta., B.C.; between Sask. and B.C. No other provincial differences were statistically significant at $p<0.001$.

Notes

Statistical significance: $p<0.01$ for differences between 2 levels of kindergarten attendance; $p<0.005$ for differences among 5 levels of community size (nominal significance level of $p<0.05$ adjusted for multiple comparisons); $p<0.001$ for differences among 10 levels of province of residence (nominal significance level of $p<0.05$ adjusted for multiple comparisons).

Substantive differences are defined as mean differences of 0.25 of a standard deviation (0.25 SD) or more, as follows: for copying and symbol use score at age 5, 0.25 SD=3.62.

Numbers vary due to missing data for some child and family characteristics.

Source: Statistics Canada: National Longitudinal Survey of Children and Youth, 2002/2003.

Table D-8

Self-regulation of learning – Means and standard errors (SE) for attention score by child and family characteristics at age 5

	Attention score	
	Mean score	**SE**
Total (n=3,874)	8.9	0.05
Sex of child (n=3,874)		
Female	9.3[1]	0.06
Male	8.5	0.07
Household income level (n=3,874)		
Below LICO (level 1)	8.5[2]	0.14
LICO to less than 2 times LICO (level 2)	8.8	0.08
Two times LICO to less than 3 times LICO (level 3)	9.1	0.09
Three times LICO or above (level 4)	9.2	0.10
Parent education level (n=3,814)		
High school or less	8.7	0.09
More than high school	9.0	0.05
Family structure (n=3,874)		
One-parent family	8.5	0.13
Two-parent family	9.0	0.05
Country of birth of parent (n=3,796)		
Parent born outside Canada	9.0	0.11
Parent born in Canada	8.9	0.50

1. Statistically significant and substantive difference between levels.
2. Statistically significant and substantive differences between level 1 and levels 3, 4.

Notes

Statistical significance: $p<0.01$ for differences between 2 levels of sex of child; $p<0.008$ for differences among 4 levels of household income level (nominal significance level of $p<0.05$ adjusted for multiple comparisons).

Substantive differences are defined as mean differences of 0.25 of a standard deviation (0.25 SD) or more, as follows: for attention score at age 5, 0.25 SD=0.58

Numbers vary due to missing data for some child and family characteristics.

LICO refers to the low income cut-off.

Source: Statistics Canada: National Longitudinal Survey of Children and Youth, 2002/2003.

Table D-8 continued

Self-regulation of learning – Means and standard errors (SE) for attention score by child and family characteristics at age 5

	Attention score	
	Mean score	SE
Kindergarten attendance (n=3,799)		
Not in kindergarten	8.7	0.16
In kindergarten	8.9	0.05
Community size (n=3,874)		
Rural (level 1)	8.8	0.15
Under 30,000 (level 2)	9.3	0.09
30,000 to under 100,000 (level 3)	8.8	0.12
100,000 to under 500,000 (level 4)	8.8	0.16
500,000 and over (level 5)	8.8	0.08
Province of residence (n=3,874)		
Newfoundland and Labrador	9.1	0.12
Prince Edward Island	8.7	0.20
Nova Scotia	8.7	0.15
New Brunswick	9.2	0.20
Quebec	8.8	0.12
Ontario	9.0	0.09
Manitoba	8.9	0.16
Saskatchewan	8.8	0.12
Alberta	8.8	0.13
British Columbia	9.0	0.11

Notes

Numbers vary due to missing data for some child and family characteristics.

Source: Statistics Canada: National Longitudinal Survey of Children and Youth, 2002/2003.

Table D-9

Self-regulation of learning – Means and standard errors (SE) for work effort score by child and family characteristics at age 5

	Work effort score	
	Mean score	SE
Total (n=3,849)	4.2	0.03
Sex of child (n=3,849)		
Female	4.3	0.04
Male	4.1	0.04
Household income level (n=3,849)		
Below LICO (level 1)	4.1	0.07
LICO to less than 2 times LICO (level 2)	4.1	0.05
Two times LICO to less than 3 times LICO (level 3)	4.3	0.05
Three times LICO or above (level 4)	4.2	0.06
Parent education level (n=3,791)		
High school or less	4.1	0.05
More than high school	4.2	0.03
Family structure (n=3,849)		
One-parent family	4.1	0.07
Two-parent family	4.2	0.03
Country of birth of parent (n=3,771)		
Parent born outside Canada	4.4	0.07
Parent born in Canada	4.1	0.03

Notes

Numbers vary due to missing data for some child and family characteristics.

LICO refers to the low income cut-off.

Source: Statistics Canada: National Longitudinal Survey of Children and Youth, 2002/2003.

Table D-9 continued

Self-regulation of learning – Means and standard errors (SE) for work effort score by child and family characteristics at age 5

	Work effort score	
	Mean score	SE
Kindergarten attendance (n=3,774)		
Not in kindergarten	4.0	0.08
In kindergarten	4.2	0.03
Community size (n=3,849)		
Rural (level 1)	4.1	0.07
Under 30,000 (level 2)	4.2	0.05
30,000 to under 100,000 (level 3)	4.1	0.06
100,000 to under 500,000 (level 4)	4.2	0.07
500,000 and over (level 5)	4.2	0.04
Province of residence (n=3,849)		
Newfoundland and Labrador	4.3	0.06
Prince Edward Island	4.1	0.11
Nova Scotia	4.1	0.07
New Brunswick	4.3	0.08
Quebec	4.1	0.06
Ontario	4.2	0.05
Manitoba	4.1	0.11
Saskatchewan	4.0	0.08
Alberta	4.1	0.08
British Columbia	4.2	0.06

Notes

Numbers vary due to missing data for some child and family characteristics.

Source: Statistics Canada: National Longitudinal Survey of Children and Youth, 2002/2003.

Table D-10

Self-regulation of learning – Percent and standard errors (SE) of children reported to often display curiosity by child and family characteristics at age 5

	Often displays curiosity	
	Percent	SE
Total (n=3,882)	57.5	1.04
Sex of child (n=3,882)		
Female	47.9[1]	1.56
Male	66.8	1.37
Household income level (n=3,882)		
Below LICO (level 1)	54.9	2.50
LICO to less than 2 times LICO (level 2)	57.6	1.82
Two times LICO to less than 3 times LICO (level 3)	55.2	2.06
Three times LICO or above (level 4)	62.8	2.27
Parent education level (n=3,822)		
High school or less	56.5	1.77
More than high school	58.3	1.25
Family structure (n=3,882)		
One-parent family	53.2	2.60
Two-parent family	58.3	1.20
Country of birth of parent (n=3,804)		
Parent born outside Canada	61.9	2.60
Parent born in Canada	56.5	1.20

1. Statistically significant and substantive difference between levels.

Notes

Statistical significance: $p<0.01$ for differences between 2 levels of sex of child.

Substantive differences are defined as percentage differences of 5 points or more.

Numbers vary due to missing data for some child and family characteristics.

LICO refers to the low income cut-off.

Source: Statistics Canada: National Longitudinal Survey of Children and Youth, 2002/2003.

Table D-10 continued

Self-regulation of learning – Percent and standard errors (SE) of children reported to often display curiosity by child and family characteristics at age 5

	Often displays curiosity	
	Percent	SE
Kindergarten attendance (n=3,807)		
Not in kindergarten	60.7	3.20
In kindergarten	56.9	1.10
Community size (n=3,882)		
Rural (level 1)	60.6	2.78
Under 30,000 (level 2)	57.4	2.18
30,000 to under 100,000 (level 3)	54.9	2.93
100,000 to under 500,000 (level 4)	59.4	2.65
500,000 and over (level 5)	56.9	1.66
Province of residence (n=3,882)		
Newfoundland and Labrador	60.5	3.41
Prince Edward Island	61.2	4.27
Nova Scotia	58.4	2.68
New Brunswick	66.4	4.58
Quebec	58.4	2.26
Ontario	58.5	1.88
Manitoba	53.4	2.78
Saskatchewan	51.1	3.22
Alberta	56.3	2.78
British Columbia	54.4	2.47

Notes

Numbers vary due to missing data for some child and family characteristics.

Source: Statistics Canada: National Longitudinal Survey of Children and Youth, 2002/2003.

Table D-11

Self-control of behaviour – Means and standard errors (SE) for self-control of behaviour score by child and family characteristics at age 5

	Self-control of behaviour score	
	Mean score	SE
Total (n=3,857)	5.5	0.03
Sex of child (n=3,857)		
Female	5.7[1]	0.05
Male	5.3	0.06
Household income level (n=3,857)		
Below LICO (level 1)	5.3	0.09
LICO to less than 2 times LICO (level 2)	5.4	0.06
Two times LICO to less than 3 times LICO (level 3)	5.6	0.05
Three times LICO or above (level 4)	5.6	0.07
Parent education level (n=3,797)		
High school or less	5.5	0.07
More than high school	5.5	0.04
Family structure (n=3,857)		
One-parent family	5.3	0.11
Two-parent family	5.5	0.04
Country of birth of parent (n=3,781)		
Parent born outside Canada	5.7	0.09
Parent born in Canada	5.4	0.04

1. Statistically significant and substantive difference between levels.

Notes

Statistical significance: $p<0.01$ for differences between 2 levels of sex of child.

Substantive differences are defined as mean differences of 0.25 of a standard deviation (0.25 SD) or more, as follows: for self-control of behaviour score at age 5, 0.25 SD=0.41.

Numbers vary due to missing data for some child and family characteristics.

LICO refers to the low income cut-off.

Source: Statistics Canada: National Longitudinal Survey of Children and Youth, 2002/2003.

Table D-11 continued

Self-control of behaviour – Means and standard errors (SE) for self-control of behaviour score by child and family characteristics at age 5

	Self-control of behaviour score	
	Mean score	SE
Kindergarten attendance (n=3,782)		
Not in kindergarten	5.3	0.12
In kindergarten	5.5	0.04
Community size (n=3,857)		
Rural (level 1)	5.4	0.10
Under 30,000 (level 2)	5.5	0.07
30,000 to under 100,000 (level 3)	5.4	0.09
100,000 to under 500,000 (level 4)	5.4	0.11
500,000 and over (level 5)	5.5	0.06
Province of residence (n=3,857)		
Newfoundland and Labrador	5.8[1]	0.10
Prince Edward Island	5.6	0.12
Nova Scotia	5.3	0.11
New Brunswick	5.6	0.15
Quebec	5.5	0.08
Ontario	5.5	0.06
Manitoba	5.4	0.08
Saskatchewan	5.3	0.07
Alberta	5.4	0.11
British Columbia	5.5	0.12

1. Statistically significant and substantive differences between N.L. and N.S., Sask. No other provincial differences were statistically significant at $p<.001$.

Notes

Statistical significance: $p<0.001$ for differences among 10 levels of province of residence (nominal significance level of $p<0.05$ adjusted for multiple comparisons).

Substantive differences are defined as mean differences of 0.25 of a standard deviation (0.25 SD) or more, as follows: for self-control of behaviour score at age 5, 0.25 SD=0.41.

Numbers vary due to missing data for some child and family characteristics.

Source: Statistics Canada: National Longitudinal Survey of Children and Youth, 2002/2003.

Table D-12

Social competence – Percent and standard errors (SE) of children reported to often play cooperatively by child and family characteristics at age 5

	Often plays cooperatively	
	Percent	SE
Total (n=3,887)	90.4	0.68
Sex of child (n=3,887)		
Female	91.8	0.82
Male	89.0	1.01
Household income level (n=3,887)		
Below LICO (level 1)	86.1[1]	1.92
LICO to less than 2 times LICO (level 2)	89.3[1]	1.19
Two times LICO to less than 3 times LICO (level 3)	91.6	1.14
Three times LICO or above (level 4)	94.5	0.95
Parent education level (n=3,827)		
High school or less	87.6	1.27
More than high school	91.7	0.75
Family structure (n=3,887)		
One-parent family	87.8	1.85
Two-parent family	90.9	0.71
Country of birth of parent (n=3,809)		
Parent born outside Canada	87.3	1.87
Parent born in Canada	91.2	0.70

1. Statistically significant and substantive difference between level 1 and level 4; and between level 2 and level 4.

Notes

Statistical significance: $p<0.008$ for differences among 4 levels of household income level (nominal significance level of $p<0.05$ adjusted for multiple comparisons).

Substantive differences are defined as percentage differences of 5 points or more.

Numbers vary due to missing data for some child and family characteristics.

LICO refers to the low income cut-off.

Source: Statistics Canada: National Longitudinal Survey of Children and Youth, 2002/2003.

Table D-12 continued

Social competence – Percent and standard errors (SE) of children reported to often play cooperatively by child and family characteristics at age 5

	Often plays cooperatively	
	Percent	SE
Kindergarten attendance (n=3,812)		
Not in kindergarten	91.6	1.74
In kindergarten	90.3	0.71
Community size (n=3,887)		
Rural (level 1)	88.1	1.77
Under 30,000 (level 2)	90.4	1.35
30,000 to under 100,000 (level 3)	91.3	2.75
100,000 to under 500,000 (level 4)	89.9	1.60
500,000 and over (level 5)	90.9	1.04
Province of residence (n=3,887)		
Newfoundland and Labrador	88.7	1.87
Prince Edward Island	93.5	1.86
Nova Scotia	88.5	1.45
New Brunswick	92.8	1.75
Quebec	93.3	1.22
Ontario	89.5	1.27
Manitoba	90.5	1.79
Saskatchewan	87.5	2.20
Alberta	89.4	1.94
British Columbia	89.9	2.00

Notes

Numbers vary due to missing data for some child and family characteristics.

Source: Statistics Canada: National Longitudinal Survey of Children and Youth, 2002/2003.

Table D-13

Social competence – Percent and standard errors (SE) of children reported to often show independence in dressing by child and family characteristics at age 5

	Often independent in dressing	
	Percent	SE
Total (n=3,884)	82.4	0.87
Sex of child (n=3,884)		
Female	86.8[1]	1.09
Male	78.2	1.36
Household income level (n=3,884)		
Below LICO (level 1)	80.8	2.13
LICO to less than 2 times LICO (level 2)	81.7	1.49
Two times LICO to less than 3 times LICO (level 3)	85.6	1.28
Three times LICO or above (level 4)	80.8	1.92
Parent education level (n=3,824)		
High school or less	82.2	1.54
More than high school	82.7	1.01
Family structure (n=3,884)		
One-parent family	83.3	2.04
Two-parent family	82.3	0.94
Country of birth of parent (n=3,806)		
Parent born outside Canada	78.4	2.18
Parent born in Canada	83.3	0.93

1. Statistically significant and substantive difference between levels.

Notes

Statistical significance: $p<0.01$ for differences between 2 levels of sex of child.

Substantive differences are defined as percentage differences of 5 points or more.

Numbers vary due to missing data for some child and family characteristics.

LICO refers to the low income cut-off.

Source: Statistics Canada: National Longitudinal Survey of Children and Youth, 2002/2003.

Table D-13 continued

Social competence – Percent and standard errors (SE) of children reported to often show independence in dressing by child and family characteristics at age 5

	Often independent in dressing	
	Percent	SE
Kindergarten attendance (n=3,809)		
Not in kindergarten	83.5	3.47
In kindergarten	82.2	0.89
Community size (n=3,884)		
Rural (level 1)	84.5	2.43
Under 30,000 (level 2)	83.7	1.70
30,000 to under 100,000 (level 3)	84.2	2.39
100,000 to under 500,000 (level 4)	82.5	2.12
500,000 and over (level 5)	80.8	1.37
Province of residence (n=3,884)		
Newfoundland and Labrador	83.9	2.33
Prince Edward Island	85.8	2.86
Nova Scotia	82.5	1.98
New Brunswick	89.5[1]	1.69
Quebec	83.2	1.83
Ontario	81.7	1.54
Manitoba	83.9	2.19
Saskatchewan	83.2	2.16
Alberta	83.4	2.19
British Columbia	80.5	2.17

1. Statistically significant and substantive difference between N.B. and Ont., B.C. No other provincial differences were significant at $p<0.001$.

Notes

Statistical significance: $p<0.001$ for differences among 10 levels of province of residence (nominal significance level of $p<0.05$ adjusted for multiple comparisons).

Substantive differences are defined as percentage differences of 5 points or more.

Numbers vary due to missing data for some child and family characteristics.

Source: Statistics Canada: National Longitudinal Survey of Children and Youth, 2002/2003.

Table D-14

Social competence – Percent and standard errors (SE) of children reported to often show independence in cleanliness by child and family characteristics at age 5

	Often independent in cleanliness	
	Percent	SE
Total (n=3,884)	85.3	0.78
Sex of child (n=3,884)		
Female	87.7	0.99
Male	83.0	1.19
Household income level (n=3,884)		
Below LICO (level 1)	82.0	2.19
LICO to less than 2 times LICO (level 2)	84.1	1.41
Two times LICO to less than 3 times LICO (level 3)	88.3	1.21
Three times LICO or above (level 4)	86.4	1.65
Parent education level (n=3,824)		
High school or less	84.4	1.41
More than high school	85.8	0.98
Family structure (n=3,884)		
One-parent family	86.4	1.94
Two-parent family	85.1	0.86
Country of birth of parent (n=3,806)		
Parent born outside Canada	78.2[1]	2.24
Parent born in Canada	87.1	0.79

1. Statistically significant and substantive difference between levels.

Notes

Statistical significance: $p<0.01$ for differences between 2 levels of country of birth of parent.

Substantive differences are defined as percentage differences of 5 points or more.

Numbers vary due to missing data for some child and family characteristics.

LICO refers to the low income cut-off.

Source: Statistics Canada: National Longitudinal Survey of Children and Youth, 2002/2003.

Table D-14 continued

Social competence – Percent and standard errors (SE) of children reported to often show independence in cleanliness by child and family characteristics at age 5

	Often independent in cleanliness	
	Percent	**SE**
Kindergarten attendance (n=3809)		
Not in kindergarten	81.3	3.46
In kindergarten	85.6	0.83
Community size (n=3,884)		
Rural (level 1)	90.9[1]	1.50
Under 30,000 (level 2)	87.0	1.54
30,000 to under 100,000 (level 3)	84.9	2.19
100,000 to under 500,000 (level 4)	86.1	2.38
500,000 and over (level 5)	83.0	1.33
Province of residence (n=3,884)		
Newfoundland and Labrador	86.4	1.70
Prince Edward Island	85.6	3.13
Nova Scotia	89.3	1.53
New Brunswick	87.5	2.71
Quebec	86.1	1.67
Ontario	83.1	1.51
Manitoba	84.9	2.23
Saskatchewan	90.0	1.79
Alberta	86.9	1.68
British Columbia	87.3	2.38

1. Statistically significant and substantive difference between level 1 and level 5.

Notes

Statistical significance: $p<0.005$ for differences among 5 levels of community size (nominal significance level of $p<0.05$ adjusted for multiple comparisons).

Substantive differences are defined as percentage differences of 5 points or more.

Numbers vary due to missing data for some child and family characteristics.

Source: Statistics Canada: National Longitudinal Survey of Children and Youth, 2002-2003.

Table D-15

Language and communication skill – Means and standard errors (SE) for receptive vocabulary score by home environment variables at age 5

Home environment variables	Receptive vocabulary score	
	Mean score	SE
Total (n=3,554)	101.5	0.38
Level of positive interaction with parent (n=3,529)		
Not high	98.5[1]	0.95
High	102.2	0.42
Frequency of reading to the child (n=3,552)		
Not daily	97.9[1]	0.59
Daily	103.6	0.45
Frequency of number use with the child (n=3,552)		
Not daily	100.2	0.55
Daily	102.3	0.50
Frequency of participation in organized sports (n=3,551)		
Not weekly	98.3[1]	0.52
Weekly	104.8	0.48
Frequency of participation in unorganized sports (n=3,550)		
Not weekly	99.2	0.64
Weekly	102.6	0.48
Frequency of lessons in physical activities (n=3,551)		
Not weekly	99.8[1]	0.47
Weekly	105.0	0.53
Frequency of lessons in the arts (n=3,548)		
Not weekly	101.1	0.41
Weekly	104.0	0.87

1. Statistically significant and substantive difference between levels.

Notes

Statistical significance: $p<0.01$ for differences between 2 levels of home environment variables.

Substantive differences are defined as mean differences of 0.25 of a standard deviation (0.25 SD) or more, as follows: for receptive vocabulary score at age 5, 0.25 SD=3.84.

Numbers vary due to missing data for some home environment variables.

Source: Statistics Canada: National Longitudinal Survey of Children and Youth, 2002/2003.

Table D-16

Language and communication skill – Means and standard errors (SE) for communication skill score by home environment variables at age 5

Home environment variables	Communication skill score	
	Mean score	SE
Total (n=3,865)	10.4	0.04
Level of positive interaction with parent (n=3,827)		
Not high	9.9[1]	0.09
High	10.5	0.04
Frequency of reading to the child (n=3,863)		
Not daily	10.2	0.06
Daily	10.5	0.04
Frequency of number use with the child (n=3,863)		
Not daily	10.2	0.06
Daily	10.6	0.05
Frequency of participation in organized sports (n=3,862)		
Not weekly	10.2[1]	0.05
Weekly	10.6	0.04
Frequency of participation in unorganized sports (n=3,861)		
Not weekly	10.2	0.07
Weekly	10.5	0.04
Frequency of lessons in physical activities (n=3,862)		
Not weekly	10.3[1]	0.05
Weekly	10.7	0.05
Frequency of lessons in the arts (n=3,858)		
Not weekly	10.4	0.04
Weekly	10.6	0.08

1. Statistically significant and substantive difference between levels.

Notes

Statistical significance: $p<0.01$ for differences between 2 levels of home environment variables.

Substantive differences are defined as mean differences of 0.25 of a standard deviation (0.25 SD) or more, as follows: for communication skill score at age 5, 0.25 SD=0.41.

Numbers vary due to missing data for some home environment variables.

Source: Statistics Canada: National Longitudinal Survey of Children and Youth, 2002/2003.

Table D-17

Academic skill and cognitive ability – Means and standard errors (SE) for number knowledge score by home environment variables at age 5

Home environment variables	Number knowledge score	
	Mean score	SE
Total (n=3,560)	99.1	0.33
Level of positive interaction with parent (n=3,535)		
Not high	96.6	0.66
High	99.7	0.37
Frequency of reading to the child (n=3,558)		
Not daily	97.0[1]	0.47
Daily	100.4	0.40
Frequency of number use with the child (n=3,558)		
Not daily	97.9	0.45
Daily	100.0	0.46
Frequency of participation in organized sports (n=3,557)		
Not weekly	96.6[1]	0.43
Weekly	101.9	0.47
Frequency of participation in unorganized sports (n=3,556)		
Not weekly	97.2	0.57
Weekly	100.1	0.40
Frequency of lessons in physical activities (n=3,557)		
Not weekly	97.9[1]	0.41
Weekly	101.7	0.49
Frequency of lessons in the arts (n=3,554)		
Not weekly	98.6[1]	0.37
Weekly	102.5	0.77

1. Statistically significant and substantive difference between levels.

Notes

Statistical significance: $p<0.01$ for differences between 2 levels of home environment variables.

Substantive differences are defined as mean differences of 0.25 of a standard deviation (0.25 SD) or more, as follows: for number knowledge score at age 5, 0.25 SD=3.47.

Numbers vary due to missing data for some home environment variables.

Source: Statistics Canada: National Longitudinal Survey of Children and Youth, 2002/2003.

Table D-18

Academic skill and cognitive ability – Means and standard errors (SE) for copying and symbol use score by home environment variables at age 5

Home environment variables	Copying and symbol use score	
	Mean score	SE
Total (n=3,410)	100.7	0.30
Level of positive interaction with parent (n=3,385)		
Not high	99.1	0.83
High	101.0	0.34
Frequency of reading to the child (n=3,408)		
Not daily	98.8	0.53
Daily	101.9	0.39
Frequency of number use with the child (n=3,408)		
Not daily	100.1	0.50
Daily	101.1	0.42
Frequency of participation in organized sports (n=3,407)		
Not weekly	98.9[1]	0.45
Weekly	102.7	0.44
Frequency of participation in unorganized sports (n=3,406)		
Not weekly	100.8	0.59
Weekly	100.6	0.35
Frequency of lessons in physical activities (n=3,407)		
Not weekly	98.9[1]	0.37
Weekly	104.4	0.53
Frequency of lessons in the arts (n=3,404)		
Not weekly	100.0[1]	0.32
Weekly	105.2	0.88

1. Statistically significant and substantive difference between levels.

Notes

Statistical significance: $p<0.01$ for differences between 2 levels of home environment variables.

Substantive differences are defined as mean differences of 0.25 of a standard deviation (0.25 SD) or more, as follows: for copying and symbol use score at age 5, 0.25 SD=3.62.

Numbers vary due to missing data for some home environment variables.

Source: Statistics Canada: National Longitudinal Survey of Children and Youth, 2002/2003.

Table D-19

Self-regulation of learning – Means and standard errors (SE) for attention score by home environment variables at age 5

Home environment variables	Attention score	
	Mean score	SE
Total (n=3,874)	8.9	0.05
Level of positive interaction with parent (n=3,838)		
Not high	8.5	0.14
High	9.0	0.05
Frequency of reading to the child (n=3,874)		
Not daily	8.7	0.08
Daily	9.0	0.06
Frequency of number use with the child (n=3,874)		
Not daily	8.7	0.09
Daily	9.1	0.06
Frequency of participation in organized sports (n=3,873)		
Not weekly	8.8	0.07
Weekly	9.1	0.06
Frequency of participation in unorganized sports (n=3,872)		
Not weekly	8.7	0.10
Weekly	9.0	0.06
Frequency of lessons in physical activities (n=3,873)		
Not weekly	8.7	0.06
Weekly	9.3	0.08
Frequency of lessons in the arts (n=3,869)		
Not weekly	8.9	0.05
Weekly	9.3	0.12

Notes

Numbers vary due to missing data for some home environment variables.

Source: Statistics Canada: National Longitudinal Survey of Children and Youth, 2002/2003.

Table D-20

Self-regulation of learning – Means and standard errors (SE) for work effort score by home environment variables at age 5

Home environment variables	Work effort score	
	Mean score	SE
Total (n=3,849)	4.2	0.03
Level of positive interaction with parent (n=3,814)		
Not high	4.0	0.07
High	4.2	0.03
Frequency of reading to the child (n=3,849)		
Not daily	4.1	0.05
Daily	4.2	0.03
Frequency of number use with the child (n=3,849)		
Not daily	4.1	0.05
Daily	4.2	0.03
Frequency of participation in organized sports (n=3,848)		
Not weekly	4.2	0.04
Weekly	4.2	0.04
Frequency of participation in unorganized sports (n=3,847)		
Not weekly	4.0	0.05
Weekly	4.3	0.03
Frequency of lessons in physical activities (n=3,848)		
Not weekly	4.1	0.03
Weekly	4.3	0.04
Frequency of lessons in the arts (n=3,844)		
Not weekly	4.2	0.03
Weekly	4.3	0.06

Notes

Numbers vary due to missing data for some home environment variables.

Source: Statistics Canada: National Longitudinal Survey of Children and Youth, 2002/2003.

Table D-21

Self-regulation of learning – Percent and standard errors (SE) of children reported to often display curiosity by home environment variables at age 5

	Often displays curiosity	
Home environment variables	**Percent**	**SE**
Total (n=3,882)	57.5	1.04
Level of positive interaction with parent (n=3,846)		
Not high	49.9[1]	2.76
High	59.3	1.13
Frequency of reading to the child (n=3,882)		
Not daily	55.6	1.69
Daily	58.7	1.29
Frequency of number use with the child (n=3,882)		
Not daily	51.4[1]	1.79
Daily	61.7	1.26
Frequency of participation in organized sports (n=3,881)		
Not weekly	56.8	1.45
Weekly	58.4	1.45
Frequency of participation in unorganized sports (n=3,880)		
Not weekly	54.4	1.92
Weekly	59.2	1.13
Frequency of lessons in physical activities (n=3,881)		
Not weekly	59.4[1]	1.25
Weekly	53.5	1.69
Frequency of lessons in the arts (n=3,877)		
Not weekly	58.0	1.06
Weekly	54.6	2.92

1. Statistically significant and substantive difference between levels.

Notes

Statistical significance: $p<0.01$ for differences between 2 levels of home environment variables.

Substantive differences are defined as percentage differences of 5 points or more.

Numbers vary due to missing data for some home environment variables.

Source: Statistics Canada: National Longitudinal Survey of Children and Youth, 2002/2003.

Table D-22

Self-control of behaviour – Means and standard errors (SE) for self-control of behaviour score by home environment variables at age 5

	Self-control of behaviour score	
Home environment variables	**Mean score**	**SE**
Total (n=3,857)	5.5	0.03
Level of positive interaction with parent (n=3,824)		
Not high	5.3	0.09
High	5.5	0.04
Frequency of reading to the child (n=3,857)		
Not daily	5.3	0.06
Daily	5.6	0.04
Frequency of number use with the child (n=3,857)		
Not daily	5.4	0.05
Daily	5.5	0.05
Frequency of participation in organized sports (n=3,856)		
Not weekly	5.4	0.05
Weekly	5.6	0.04
Frequency of participation in unorganized sports (n=3,855)		
Not weekly	5.4	0.06
Weekly	5.5	0.04
Frequency of lessons in physical activities (n=3,856)		
Not weekly	5.4	0.04
Weekly	5.7	0.06
Frequency of lessons in the arts (n=3,852)		
Not weekly	5.5	0.04
Weekly	5.6	0.08

Notes

Numbers vary due to missing data for some home environment variables.

Source: Statistics Canada: National Longitudinal Survey of Children and Youth, 2002/2003.

Table D-23

Social competence – Percent and standard errors (SE) of children reported to often play cooperatively by home environment variables at age 5

	Often plays cooperatively	
Home environment variables	**Percent**	**SE**
Total (n=3,887)	90.4	0.67
Level of positive interaction with parent (n=3,850)		
Not high	83.4[1]	2.09
High	91.9	0.68
Frequency of reading to the child (n=3,887)		
Not daily	90.4	1.07
Daily	90.4	0.85
Frequency of number use with the child (n=3,887)		
Not daily	89.2	1.01
Daily	91.2	0.89
Frequency of participation in organized sports (n=3,886)		
Not weekly	88.7	0.99
Weekly	92.3	0.85
Frequency of participation in unorganized sports (n=3,885)		
Not weekly	86.9[1]	1.33
Weekly	92.3	0.72
Frequency of lessons in physical activities (n=3,886)		
Not weekly	89.7	0.85
Weekly	91.9	1.03
Frequency of lessons in the arts (n=3,882)		
Not weekly	89.7	0.75
Weekly	94.7	1.26

1. Statistically significant and substantive difference between levels.

Notes

Statistical significance: $p<0.01$ for differences between 2 levels of home environment variables.

Substantive differences are defined as percentage differences of 5 points or more.

Numbers vary due to missing data for some home environment variables.

Source: Statistics Canada: National Longitudinal Survey of Children and Youth, 2002/2003.

Table D-24

Social competence – Percent and standard errors (SE) of children reported to often show independence in dressing by home environment variables at age 5

	Often independent in dressing	
Home environment variables	**Percent**	**SE**
Total (n=3,884)	82.4	0.87
Level of positive interaction with parent (n=3,848)		
Not high	80.2	2.18
High	82.8	0.95
Frequency of reading to the child (n=3,884)		
Not daily	81.2	1.47
Daily	83.2	1.06
Frequency of number use with the child (n=3,884)		
Not daily	80.8	1.36
Daily	83.5	1.10
Frequency of participation in organized sports (n=3,883)		
Not weekly	82.0	1.25
Weekly	82.9	1.12
Frequency of participation in unorganized sports (n=3,882)		
Not weekly	80.1	1.46
Weekly	83.7	1.03
Frequency of lessons in physical activities (n=3,883)		
Not weekly	81.4	1.04
Weekly	84.8	1.34
Frequency of lessons in the arts (n=3,879)		
Not weekly	82.5	0.95
Weekly	82.0	2.28

Notes

Numbers vary due to missing data for some home environment variables.

Source: Statistics Canada: National Longitudinal Survey of Children and Youth, 2002/2003.

Table D-25

Social competence – Percent and standard errors (SE) of children reported to often show independence in cleanliness by home environment variables at age 5

	Often independent in cleanliness	
Home environment variables	**Percent**	**SE**
Total (n=3,884)	85.3	0.78
Level of positive interaction with parent (n=3,848)		
Not high	80.8	2.06
High	86.2	0.83
Frequency of reading to the child (n=3,884)		
Not daily	82.7	1.35
Daily	87.0	0.95
Frequency of number use with the child (n=3,884)		
Not daily	81.5[1]	1.31
Daily	87.9	0.91
Frequency of participation in organized sports (n=3,883)		
Not weekly	84.0	1.18
Weekly	86.8	1.04
Frequency of participation in unorganized sports (n=3,882)		
Not weekly	81.6[1]	1.43
Weekly	87.3	0.88
Frequency of lessons in physical activities (n=3,883)		
Not weekly	84.2	1.00
Weekly	87.6	1.20
Frequency of lessons in the arts (n=3,879)		
Not weekly	85.1	0.85
Weekly	87.1	1.91

1. Statistically significant and substantive difference between levels.

Notes

Statistical significance: $p<0.01$ for differences between 2 levels of home environment variables.

Substantive differences are defined as percentage differences of 5 points or more.

Numbers vary due to missing data for some home environment variables.

Source: Statistics Canada: National Longitudinal Survey of Children and Youth, 2002/2003.

Table D-26

Home environment – Percent and standard errors (SE) of children reported to have high levels of positive interaction with the parent by child and family characteristics at age 5

	High level of positive interaction with parent	
	Percent	SE
Total (n=3,851)	82.3	0.89
Sex of child (n=3,851)		
Female	83.5	1.13
Male	81.2	1.24
Household income level (n=3,851)		
Below LICO (level 1)	78.6[1]	2.29
LICO to less than 2 times LICO (level 2)	80.8	1.39
Two times LICO to less than 3 times LICO (level 3)	85.7	1.40
Three times LICO or above (level 4)	83.6	1.75
Parent education level (n=3,794)		
High school or less	79.3	1.46
More than high school	84.1	1.10
Family structure (n=3,851)		
One-parent family	77.5[2]	2.04
Two-parent family	83.1	0.97
Country of birth of parent (n=3,783)		
Parent born outside Canada	76.7[2]	2.25
Parent born in Canada	84.2	0.91

1. Statistically significant and substantive difference between level 1 and level 3.
2. Statistically significant and substantive difference between levels.

Notes

Statistical significance: $p<0.01$ for differences between 2 levels of family structure and country of birth of parent; $p<0.008$ for differences among 4 levels of household income level (nominal significance level of $p<0.05$ adjusted for multiple comparisons).

Substantive differences are defined as percentage differences of 5 points or more.

Numbers vary due to missing data for some child and family characteristics.

LICO refers to the low income cut-off.

Source: Statistics Canada: National Longitudinal Survey of Children and Youth, 2002/2003.

Table D-26 continued

Home environment – Percent and standard errors (SE) of children reported to have high levels of positive interaction with the parent by child and family characteristics at age 5

	High level of positive interaction with parent	
	Percent	SE
Kindergarten attendance (n=3,776)		
Not in kindergarten	81.2	3.19
In kindergarten	82.4	0.91
Community size (n=3,851)		
Rural (level 1)	82.5	2.14
Under 30,000 (level 2)	83.9	1.97
30,000 to under 100,000 (level 3)	86.2	2.94
100,000 to under 500,000 (level 4)	86.0	1.93
500,000 and over (level 5)	79.4	1.39
Province of residence (n=3,851)		
Newfoundland and Labrador	93.6[1]	1.29
Prince Edward Island	82.7	3.37
Nova Scotia	87.2[1]	2.22
New Brunswick	92.9	0.94
Quebec	73.5[1]	2.32
Ontario	85.3	1.50
Manitoba	82.9	2.62
Saskatchewan	79.6	2.05
Alberta	85.7	1.87
British Columbia	81.2	2.17

1. Statistically significant and substantive difference between: N.L. and Que., Ont., Man., Sask., Alta., B.C.; between N.S. and Que.; between N.B. and Que., Ont., Man., Sask., Alta., B.C.; between Que. and Ont., Alta. No other provincial differences were statistically significant at $p<0.001$.

Notes

Statistical significance: $p<0.001$ for differences among 10 levels of province of residence (nominal significance level of $p<0.05$ adjusted for multiple comparisons).

Substantive differences are defined as percentage differences of 5 points or more.

Numbers vary due to missing data for some child and family characteristics.

Source: Statistics Canada: National Longitudinal Survey of Children and Youth, 2002/2003.

Table D-27

Home environment – Percent and standard errors (SE) of children who were read to daily by child and family characteristics at age 5

	Read to daily	
	Percent	SE
Total (n=3,887)	61.7	1.07
Sex of child (n=3,887)		
Female	63.3	1.46
Male	60.2	1.41
Household income level (n=3,887)		
Below LICO (level 1)	55.4[1]	2.55
LICO to less than 2 times LICO (level 2)	59.4[1]	1.61
Two times LICO to less than 3 times LICO (level 3)	66.5	1.89
Three times LICO or above (level 4)	64.9	2.32
Parent education level (n=3,827)		
High school or less	53.7[2]	1.72
More than high school	66.5	1.32
Family structure (n=3,887)		
One-parent family	56.1[2]	2.71
Two-parent family	62.7	1.13
Country of birth of parent (n=3,809)		
Parent born outside Canada	63.2	2.61
Parent born in Canada	61.6	1.13

1. Statistically significant and substantive difference between level 1 and levels 3, 4; and between level 2 and levels 3, 4.
2. Statistically significant and substantive difference between levels.

Notes

Statistical significance: $p<0.01$ for differences between 2 levels of sex of child, parent education level, family structure, and country of birth of parent; $p<0.008$ for differences among 4 levels of household income level (nominal significance level of $p<0.05$ adjusted for multiple comparisons).

Substantive differences are defined as percentage differences of 5 points or more.

Numbers vary due to missing data for some child and family characteristics.

LICO refers to the low income cut-off.

Source: Statistics Canada: National Longitudinal Survey of Children and Youth, 2002/2003.

Table D-27 continued

Home environment – Percent and standard errors (SE) of children who were read to daily by child and family characteristics at age 5

	Read to daily	
	Percent	SE
Kindergarten attendance (n=3,812)		
Not in kindergarten	44.9[1]	3.57
In kindergarten	63.4	1.10
Community size (n=3,887)		
Rural (level 1)	55.8[2]	3.09
Under 30,000 (level 2)	62.3	1.91
30,000 to under 100,000 (level 3)	62.3	4.39
100,000 to under 500,000 (level 4)	67.8	2.47
500,000 and over (level 5)	60.6	1.70
Province of residence (n=3,887)		
Newfoundland and Labrador	91.4[3]	1.50
Prince Edward Island	70.2	4.00
Nova Scotia	71.1	2.83
New Brunswick	74.3[3]	2.14
Quebec	35.3[3]	2.10
Ontario	67.3	1.88
Manitoba	68.9	5.63
Saskatchewan	58.2	4.14
Alberta	71.4	2.48
British Columbia	72.8	2.78

1. Statistically significant and substantive difference between levels.
2. Statistically significant and substantive difference between level 1 and level 4.
3. Statistically significant and substantive difference between: N.L. and all other provinces; between Que. and all other provinces; between N.B. and Sask. No other provincial differences were statistically significant at $p<0.001$.

Notes

Statistical significance: $p<0.01$ for differences between 2 levels of kindergarten attendance; $p<0.005$ for differences among 5 levels of community size (nominal significance level of $p<0.05$ adjusted for multiple comparisons); $p<0.001$ for differences among 10 levels of province of residence (nominal significance level of $p<0.05$ adjusted for multiple comparisons).

Substantive differences are defined as percentage differences of 5 points or more.

Numbers vary due to missing data for some child and family characteristics.

Source: Statistics Canada: National Longitudinal Survey of Children and Youth, 2002/2003.

Table D-28

Home environment – Percent and standard errors (SE) of children who were encouraged to use numbers daily by child and family characteristics at age 5

	Daily number use	
	Percent	SE
Total (n=3,887)	59.8	1.20
Sex of child (n=3,887)		
Female	59.8	1.51
Male	59.8	1.54
Household income level (n=3,887)		
Below LICO (level 1)	60.4	2.71
LICO to less than 2 times LICO (level 2)	56.9[1]	1.75
Two times LICO to less than 3 times LICO (level 3)	59.8	2.11
Three times LICO or above (level 4)	65.1	2.30
Parent education level (n=3,827)		
High school or less	55.6[2]	1.98
More than high school	62.0	1.34
Family structure (n=3,887)		
One-parent family	62.4	2.45
Two-parent family	59.3	1.26
Country of birth of parent (n=3,809)		
Parent born outside Canada	54.4	2.78
Parent born in Canada	61.3	1.20

1. Statistically significant and substantive difference between level 2 and level 4.
2. Statistically significant and substantive difference between levels.

Notes

Statistical significance: $p<0.01$ for differences between 2 levels of parent education level; $p<0.008$ for differences among 4 levels of household income level (nominal significance level of $p<0.05$ adjusted for multiple comparisons).

Substantive differences are defined as percentage differences of 5 points or more.

Numbers vary due to missing data for some child and family characteristics.

LICO refers to the low income cut-off.

Source: Statistics Canada: National Longitudinal Survey of Children and Youth, 2002/2003.

Table D-28 continued

Home environment – Percent and standard errors (SE) of children who were encouraged to use numbers daily by child and family characteristics at age 5

	Daily number use	
	Percent	SE
Kindergarten attendance (n=3,812)		
Not in kindergarten	42.8[1]	3.63
In kindergarten	61.5	1.23
Community size (n=3,887)		
Rural (level 1)	61.7	2.89
Under 30,000 (level 2)	60.6	2.37
30,000 to under 100,000 (level 3)	59.7	4.35
100,000 to under 500,000 (level 4)	68.6[2]	3.55
500,000 and over (level 5)	56.2	1.67
Province of residence (n=3,887)		
Newfoundland and Labrador	78.2[3]	2.87
Prince Edward Island	71.6	3.79
Nova Scotia	76.0	2.81
New Brunswick	73.2	3.98
Quebec	33.6[3]	2.29
Ontario	66.6	1.88
Manitoba	67.6	2.72
Saskatchewan	68.5	3.02
Alberta	70.2	3.15
British Columbia	62.1	4.56

1. Statistically significant and substantive difference between levels.
2. Statistically significant and substantive difference between level 4 and level 5.
3. Statistically significant and substantive difference between: N.L. and Ont., Que.; between Que. and all other provinces. No other provincial differences were statistically significant at $p<0.001$.

Notes

Statistical significance: $p<0.01$ for differences between 2 levels of kindergarten attendance; $p<0.005$ for differences among 5 levels of community size (nominal significance level of $p<0.05$ adjusted for multiple comparisons); $p<0.001$ for differences among 10 levels of province of residence (nominal significance level of $p<0.05$ adjusted for multiple comparisons).

Substantive differences are defined as percentage differences of 5 points or more.

Numbers vary due to missing data for some child and family characteristics.

Source: Statistics Canada: National Longitudinal Survey of Children and Youth, 2002/2003.

Table D-29

Home environment – Percent and standard errors (SE) of children who participated in organized sports at least weekly by child and family characteristics at age 5

	Organized sports at least weekly	
	Percent	SE
Total (n=3,887)	47.4	1.08
Sex of child (n=3,887)		
Female	43.9[1]	1.54
Male	50.8	1.46
Household income level (n=3,887)		
1. Below LICO (level 1)	23.3[2]	2.18
2. LICO to less than 2 times LICO (level 2)	40.8[2]	1.67
3. Two times LICO to less than 3 times LICO (level 3)	57.4[2]	2.03
4. Three times LICO or above (level 4)	66.8	2.41
Parent education level (n=3,827)		
High school or less	31.4[1]	1.85
More than high school	56.2	1.25
Family structure (n=3,887)		
One-parent family	33.1[1]	2.51
Two-parent family	50.0	1.22
Country of birth of parent (n=3,809)		
Parent born outside Canada	36.5[1]	2.42
Parent born in Canada	50.6	1.18

1. Statistically significant and substantive difference between levels.
2. Statistically significant and substantive difference between: level 1 and levels 2, 3, 4; between level 2 and levels 3, 4; between level 3 and level 4.

Notes

Statistical significance: $p<0.01$ for differences between 2 levels of sex of child, parent education level, family structure, and country of birth of parent; $p<0.008$ for differences among 4 levels of household income level (nominal significance level of $p<0.05$ adjusted for multiple comparisons).

Substantive differences are defined as percentage differences of 5 points or more.

Numbers vary due to missing data for some child and family characteristics.

LICO refers to the low income cut-off.

Source: Statistics Canada: National Longitudinal Survey of Children and Youth, 2002/2003.

Table D-29 continued
Home environment – Percent and standard errors (SE) of children who participated in organized sports at least weekly by child and family characteristics at age 5

	Organized sports at least weekly	
	Percent	SE
Kindergarten attendance (n=3,812)		
Not in kindergarten	39.7[1]	2.89
In kindergarten	48.5	1.16
Community size (n=3,887)		
Rural (level 1)	36.0[2]	3.67
Under 30,000 (level 2)	49.2	2.00
30,000 to under 100,000 (level 3)	50.3	3.58
100,000 to under 500,000 (level 4)	51.7	2.88
500,000 and over (level 5)	47.0	1.65
Province of residence (n=3,887)		
Newfoundland and Labrador	41.9	3.53
Prince Edward Island	50.7[3]	4.87
Nova Scotia	43.3	3.21
New Brunswick	30.9[3]	2.73
Quebec	42.6[3]	2.18
Ontario	52.4[3]	1.79
Manitoba	43.1	4.57
Saskatchewan	52.9	3.93
Alberta	40.5	2.77
British Columbia	49.3	3.49

1. Statistically significant and substantive difference between levels.
2. Statistically significant and substantive differences between level 1 and levels 2, 3, 4.
3. Statistically significant and substantive differences between: P.E.I. and N.B.; between N.B. and Que., Ont., Sask., B.C.,: between Que. and Ont.; between Ont. and Alta. No other provincial differences were statistically significant at $p<0.001$.

Notes

Statistical significance: $p<0.01$ for differences between 2 levels of kindergarten attendance; $p<0.005$ for differences among 5 levels of community size (nominal significance level of $p<0.05$ adjusted for multiple comparisons); $p<0.001$ for differences among 10 levels of province of residence (nominal significance level of $p<0.05$ adjusted for multiple comparisons).

Substantive differences are defined as percentage differences of 5 points or more.

Numbers vary due to missing data for some child and family characteristics.

Source: Statistics Canada: National Longitudinal Survey of Children and Youth, 2002/2003.

Table D-30

Home environment – Percent and standard errors (SE) of children who participated in unorganized sports at least weekly by child and family characteristics at age 5

	Unorganized sports at least weekly	
	Percent	SE
Total (n=3,886)	65.3	1.05
Sex of child (n=3,886)		
Female	63.6	1.43
Male	66.8	1.45
Household income level (n=3,886)		
Below LICO (level 1)	58.3[1]	2.46
LICO to less than 2 times LICO (level 2)	61.4[1]	1.85
Two times LICO to less than 3 times LICO (level 3)	70.5	1.71
Three times LICO or above (level 4)	71.5	2.06
Parent education level (n=3,826)		
High school or less	61.1[2]	1.90
More than high school	67.9	1.22
Family structure (n=3,886)		
One-parent family	64.8	2.64
Two-parent family	65.4	1.18
Country of birth of parent (n=3,808)		
Parent born outside Canada	56.2[2]	2.59
Parent born in Canada	68.4	1.16

1. Statistically significant and substantive differences between: level 1 and levels 3, 4; between level 2 and levels 3, 4.
2. Statistically significant and substantive difference between levels.

Notes

Statistical significance: $p<0.01$ for differences between 2 levels of sex of child, parent education level, and country of birth of parent; $p<0.008$ for differences among 4 levels of household income level (nominal significance level of $p<0.05$ adjusted for multiple comparisons).

Substantive differences are defined as percentage differences of 5 points or more.

Numbers vary due to missing data for some child and family characteristics.

LICO refers to the low income cut-off.

Source: Statistics Canada: National Longitudinal Survey of Children and Youth, 2002/2003.

Table D-30 continued

Home environment – Percent and standard errors (SE) of children who participated in unorganized sports at least weekly by child and family characteristics at age 5

	Unorganized sports at least weekly	
	Percent	SE
Kindergarten attendance (n=3,811)		
Not in kindergarten	64.8	3.30
In kindergarten	65.3	1.13
Community size (n=3,886)		
Rural (level 1)	64.4	3.05
Under 30,000 (level 2)	69.0	2.48
30,000 to under 100,000 (level 3)	68.6	2.67
100,000 to under 500,000 (level 4)	69.6	2.57
500,000 and over (level 5)	61.3	1.65
Province of residence (n=3,886)		
Newfoundland and Labrador	63.4[1]	3.28
Prince Edward Island	69.8	4.37
Nova Scotia	78.4[1]	2.52
New Brunswick	65.5	3.38
Quebec	66.2	2.07
Ontario	62.6	1.89
Manitoba	52.2[1]	4.72
Saskatchewan	60.9	3.40
Alberta	70.1	2.70
British Columbia	70.9	2.79

1. Statistically significant and substantive differences between P.E.I. and N.S.; between N.S. and Que., Ont., Man., Sask.; between Man. and B.C. No other provincial differences were statistically significant at $p<0.001$.

Notes

Statistical significance: $p<0.001$ for differences among 10 levels of province of residence (nominal significance level of $p<0.05$ adjusted for multiple comparisons).

Substantive differences are defined as percentage differences of 5 points or more.

Numbers vary due to missing data for some child and family characteristics.

Source: Statistics Canada: National Longitudinal Survey of Children and Youth, 2002/2003.

Table D-31

Home environment – Percent and standard errors (SE) of children who participated in lessons in physical activities at least weekly by child and family characteristics at age 5

	Lessons in physical activities at least weekly	
	Percent	SE
Total (n=3,887)	31.7	0.97
Sex of child (n=3,887)		
Female	43.4[1]	1.44
Male	20.4	1.24
Household income level (n=3,887)		
Below LICO (level 1)	18.0[2]	2.11
LICO to less than 2 times LICO (level 2)	26.8[2]	1.55
Two times LICO to less than 3 times LICO (level 3)	36.2[2]	1.83
Three times LICO or above (level 4)	46.6	2.27
Parent education level (n=3,827)		
High school or less	20.3[1]	1.48
More than high school	37.9	1.24
Family structure (n=3,887)		
One-parent family	21.4[1]	2.28
Two-parent family	33.5	1.07
Country of birth of parent (n=3,809)		
Parent born outside Canada	27.2[1]	2.21
Parent born in Canada	33.1	1.12

1. Statistically significant and substantive difference between levels.
2. Statistically significant and substantive differences between level 1 and levels 2, 3, 4; between level 2 and levels 3, 4; between levels 3 and 4.

Notes

Statistical significance: $p<0.01$ for differences between 2 levels of sex of child, parent education level, family structure, and country of birth of parent; $p<0.008$ for differences among 4 levels of household income level (nominal significance level of $p<0.05$ adjusted for multiple comparisons).

Substantive differences are defined as percentage differences of 5 points or more.

Numbers vary due to missing data for some child and family characteristics.

LICO refers to the low income cut-off.

Source: Statistics Canada: National Longitudinal Survey of Children and Youth, 2002/2003.

Table D-31 continued

Home environment – Percent and standard errors (SE) of children who participated in lessons in physical activities at least weekly by child and family characteristics at age 5

	Lessons in physical activities at least weekly	
	Percent	**SE**
Kindergarten attendance (n=3,812)		
Not in kindergarten	22.3[1]	2.51
In kindergarten	32.8	1.06
Community size (n=3,887)		
Rural (level 1)	18.4[2]	2.48
Under 30,000 (level 2)	27.4[2]	2.10
30,000 to under 100,000 (level 3)	33.7	3.34
100,000 to under 500,000 (level 4)	33.6	2.79
500,000 and over (level 5)	35.9	1.57
Province of residence (n=3,887)		
Newfoundland and Labrador	21.8	2.70
Prince Edward Island	23.0	3.06
Nova Scotia	23.4	2.78
New Brunswick	19.9	2.50
Quebec	27.1	1.93
Ontario	36.1[3]	1.65
Manitoba	26.9	2.56
Saskatchewan	29.9	2.30
Alberta	30.5	2.81
British Columbia	33.4	3.48

1. Statistically significant and substantive difference between levels.
2. Statistically significant and substantive difference between level 1 and levels 3, 4, 5; between level 2 and level 5.
3. Statistically significant and substantive differences between Ont. and N.L., P.E.I., N.S., N.B., Que. No other provincial differences were statistically significant at $p<0.001$.

Notes

Statistical significance: $p<0.01$ for differences between 2 levels of kindergarten attendance; $p<0.005$ for differences among 5 levels of community size (nominal significance level of $p<0.05$ adjusted for multiple comparisons); $p<0.001$ for differences among 10 levels of province of residence (nominal significance level of $p<0.05$ adjusted for multiple comparisons).

Substantive differences are defined as percentage differences of 5 points or more.

Numbers vary due to missing data for some child and family characteristics.

Source: Statistics Canada: National Longitudinal Survey of Children and Youth, 2002/2003.

Table D-32

Home environment – Percent and standard errors (SE) of children who participated in lessons in the arts at least weekly by child and family characteristics at age 5

	Lessons in the arts at least weekly	
	Percent	SE
Total (n=3,883)	13.6	0.80
Sex of child (n=3,883)		
Female	16.0	1.18
Male	11.2	0.91
Household income level (n=3,883)		
Below LICO (level 1)	13.8	1.93
LICO to less than 2 times LICO (level 2)	10.3[1]	0.99
Two times LICO to less than 3 times LICO (level 3)	14.9	1.43
Three times LICO or above (level 4)	17.9	1.91
Parent education level (n=3,823)		
High school or less	8.9[2]	1.20
More than high school	16.3	1.05
Family structure (n=3,883)		
One-parent family	12.0	1.93
Two-parent family	13.8	0.83
Country of birth of parent (n=3,805)		
Parent born outside Canada	14.3	1.73
Parent born in Canada	13.3	0.90

1. Statistically significant and substantive difference between level 2 and level 4.
2. Statistically significant and substantive differences between levels.

Notes

Statistical significance: $p<0.01$ for differences between 2 levels of parent education level; $p<0.008$ for differences among 4 levels of household income level (nominal significance level of $p<0.05$ adjusted for multiple comparisons).

Substantive differences are defined as percentage differences of 5 points or more.

Numbers vary due to missing data for some child and family characteristics.

LICO refers to the low income cut-off.

Source: Statistics Canada: National Longitudinal Survey of Children and Youth, 2002/2003.

Table D-32 continued

Home environment – Percent and standard errors (SE) of children who participated in lessons in the arts at least weekly by child and family characteristics at age 5

	Lessons in the arts at least weekly	
	Percent	SE
Kindergarten attendance (n=3,808)		
Not in kindergarten	8.6[1]	1.61
In kindergarten	14.0	0.85
Community size (n=3,883)		
Rural (level 1)	9.4[2]	1.69
Under 30,000 (level 2)	11.9	1.69
30,000 to under 100,000 (level 3)	8.3[2]	2.18
100,000 to under 500,000 (level 4)	14.9	2.01
500,000 and over (level 5)	16.2	1.19
Province of residence (n=3,883)		
Newfoundland and Labrador	15.3	2.19
Prince Edward Island	9.7	2.29
Nova Scotia	12.6	2.12
New Brunswick	7.8	1.80
Quebec	9.7	1.22
Ontario	14.8	1.40
Manitoba	12.2	1.62
Saskatchewan	11.2	1.68
Alberta	13.7	2.38
British Columbia	18.4	2.98

1. Statistically significant and substantive difference between levels.
2. Statistically significant and substantive difference between level 1 and level 5; between level 3 and level 5.

Notes

Statistical significance: $p<0.01$ for differences between 2 levels of kindergarten attendance; $p<0.005$ for differences among 5 levels of community size (nominal significance level of $p<0.05$ adjusted for multiple comparisons).

Substantive differences are defined as percentage differences of 5 points or more.

Numbers vary due to missing data for some child and family characteristics.

Source: Statistics Canada: National Longitudinal Survey of Children and Youth, 2002/2003.

Table D-33

Receptive vocabulary score at age 5 predicted by frequency of reading to the child and household income level – Regression coefficients (B) and standard errors (SE) of coefficients

	Receptive vocabulary score	
Predictors	**B**	**SE**
Constant	107.27	0.71
Frequency of reading		
Not daily	-4.98[2]	0.68
Daily[1]	0.00	0.00
Household income level		
Below LICO	-11.51[2]	1.11
LICO to less than 2 times LICO	-5.59[2]	0.89
Two times LICO to less than 3 times LICO	0.00	0.89
Three times LICO or above[1]	0.00	0.00

B unstandardized regression coefficient

1. Reference category.
2. Coefficient differs statistically from 0.

Notes

The interaction term was found to be non-significant in a preliminary analysis.

Statistical significance: $p<0.0125$ (nominal significance level of $p<0.05$ adjusted for multiple comparisons).

LICO refers to the low income cut-off.

Source: Statistics Canada: National Longitudinal Survey of Children and Youth, 2002/2003.

Table D-34

Receptive vocabulary score at age 5 predicted by participation in organized sports and household income level – Regression coefficients (B) and standard errors (SE) of coefficients

	Receptive vocabulary score	
Predictors	**B**	**SE**
Constant	107.03	0.71
Participation in organized sports		
Not weekly	-4.43[2]	0.69
Weekly[1]	0.00	0.00
Household income level		
Below LICO	-10.15[2]	1.17
LICO to less than 2 times LICO	-4.77[2]	0.91
Two times LICO to less than 3 times LICO	0.43	0.90
Three times LICO or above[1]	0.00	0.00

B unstandardized regression coefficient

1. Reference category.
2. Coefficient differs statistically from 0.

Notes

The interaction term was found to be non-significant in a preliminary analysis.

Statistical significance: $p<0.0125$ (nominal significance level of $p<0.05$ adjusted for multiple comparisons).

LICO refers to the low income cut-off.

Source: Statistics Canada: National Longitudinal Survey of Children and Youth, 2002/2003.

Table D-35

Receptive vocabulary score at age 5 predicted by participation in lessons in physical activities and household income level – Regression coefficients (B) and standard errors (SE) of coefficients

Predictors	Receptive vocabulary score	
	B	SE
Constant	107.49	0.72
Participation in lessons in physical activities		
Not weekly	-3.65[2]	0.69
Weekly[1]	0.00	0.00
Household income level		
Below LICO	-10.99[2]	1.14
LICO to less than 2 times LICO	-5.17[2]	0.91
Two times LICO to less than 3 times LICO	0.44	0.90
Three times LICO or above[1]	0.00	0.00

B unstandardized regression coefficient

1. Reference category.
2. Coefficient differs statistically from 0.

Notes

The interaction term was found to be non-significant in a preliminary analysis.

Statistical significance: $p<0.0125$ (nominal significance level of $p<0.05$ adjusted for multiple comparisons).

LICO refers to the low income cut-off.

Source: Statistics Canada: National Longitudinal Survey of Children and Youth, 2002/2003.

Table D-36

Communication skill score at age 5 predicted by positive interaction with parent and household income level – Regression coefficients (B) and standard errors (SE) of coefficients

	Communication skill score	
Predictors	**B**	**SE**
Constant	10.83	0.07
Level of positive interaction with parent		
Not high	-0.52[2]	0.10
High[1]	0.00	0.00
Household income level		
Below LICO	-0.76[2]	0.11
LICO to less than 2 times LICO	-0.43[2]	0.09
Two times LICO to less than 3 times LICO	-0.15	0.09
Three times LICO or above[1]	0.00	0.00

B unstandardized regression coefficient

1. Reference category.
2. Coefficient differs statistically from 0.

Notes

The interaction term was found to be non-significant in a preliminary analysis.

Statistical significance: $p<0.0125$ (nominal significance level of $p<0.05$ adjusted for multiple comparisons).

LICO refers to the low income cut-off.

Source: Statistics Canada: National Longitudinal Survey of Children and Youth, 2002/2003.

Table D-37

Communication skill score at age 5 predicted by participation in organized sports and household income level – Regression coefficients (B) and standard errors (SE) of coefficients

	Communication skill score	
Predictors	**B**	**SE**
Constant	10.86	0.07
Participation in organized sports		
Not weekly	-0.33[2]	0.07
Weekly[1]	0.00	0.00
Household income level		
Below LICO	-0.65[2]	0.12
LICO to less than 2 times LICO	-0.38[2]	0.09
Two times LICO to less than 3 times LICO	-0.11	0.09
Three times LICO or above[1]	0.00	0.00

B unstandardized regression coefficient

1. Reference category.

2. Coefficient differs statistically from 0.

Notes

The interaction term was found to be non-significant in a preliminary analysis.

Statistical significance: $p<0.0125$ (nominal significance level of $p<0.05$ adjusted for multiple comparisons).

LICO refers to the low income cut-off.

Source: Statistics Canada: National Longitudinal Survey of Children and Youth, 2002/03.

Table D-38

Communication skill score at age 5 predicted by participation in lessons in physical activities and household income level – Regression coefficients (B) and standard errors (SE) of coefficients

	Communication skill score	
Predictors	**B**	**SE**
Constant	10.92	0.07
Participation in lessons in physical activities		
Not weekly	-0.32[2]	0.07
Weekly[1]	0.00	0.00
Household income level		
Below LICO	-0.70[2]	0.11
LICO to less than 2 times LICO	-0.40[2]	0.09
Two times LICO to less than 3 times LICO	-0.10	0.09
Three times LICO or above[1]	0.00	0.00

B unstandardized regression coefficient

1. Reference category.
2. Coefficient differs statistically from 0.

Notes

The interaction term was found to be non-significant in a preliminary analysis.

Statistical significance: $p<0.0125$ (nominal significance level of $p<0.05$ adjusted for multiple comparisons).

LICO refers to the low income cut-off.

Source: Statistics Canada: National Longitudinal Survey of Children and Youth, 2002/03.

Table D-39

Copying and symbol use score at age 5 predicted by participation in organized sports and household income level – Regression coefficients (B) and standard errors (SE) of coefficients

	Copying and symbol use score	
Predictors	**B**	**SE**
Constant	104.76	0.79
Participation in organized sports		
Not weekly	-2.76[2]	0.68
Weekly[1]	0.00	0.00
Household income level		
Below LICO	-6.32[2]	1.20
LICO to less than 2 times LICO	-3.02[2]	0.90
Two times LICO to less than 3 times LICO	-1.85	0.92
Three times LICO or above[1]	0.00	0.00

B unstandardized regression coefficient

1. Reference category.

2. Coefficient differs statistically from 0.

Notes

The interaction term was found to be non-significant in a preliminary analysis.

Statistical significance: $p<0.0125$ (nominal significance level of $p<0.05$ adjusted for multiple comparisons).

LICO refers to the low income cut-off.

Source: Statistics Canada: National Longitudinal Survey of Children and Youth, 2002/03.

Table D-40

Copying and symbol use score at age 5 predicted by participation in lessons in physical activities and household income level – Regression coefficients (B) and standard errors (SE) of coefficients

	Copying and symbol use score	
Predictors	**B**	**SE**
Constant	106.35	0.79
Participation in lessons in physical activities		
Not weekly	-4.78[2]	0.67
Weekly[1]	0.00	0.00
Household income level		
Below LICO	-6.15[2]	1.19
LICO to less than 2 times LICO	-2.80[2]	0.90
Two times LICO to less than 3 times LICO	-1.56	0.92
Three times LICO or above[1]	0.00	0.00

B unstandardized regression coefficient

1. Reference category.
2. Coefficient differs statistically from 0.

Notes

The interaction term was found to be non-significant in a preliminary analysis.

Statistical significance: $p<0.0125$ (nominal significance level of $p<0.05$ adjusted for multiple comparisons).

LICO refers to the low income cut-off.

Source: Statistics Canada: National Longitudinal Survey of Children and Youth, 2002/03.

Table D-41

Copying and symbol use score at age 5 predicted by participation in lessons in the arts and household income level – Regression coefficients (B) and standard errors (SE) of coefficients

	Copying and symbol use score	
Predictors	**B**	**SE**
Constant	108.00	1.09
Participation in lessons in the arts		
Not weekly	-5.04[2]	0.93
Weekly[1]	0.00	0.00
Household income level		
Below LICO	-7.34[2]	1.14
LICO to less than 2 times LICO	-3.36[2]	0.88
Two times LICO to less than 3 times LICO	-1.89	0.90
Three times LICO or above[1]	0.00	0.00

B unstandardized regression coefficient

1. Reference category.
2. Coefficient differs statistically from 0.

Notes

The interaction term was found to be non-significant in a preliminary analysis.

Statistical significance: $p<0.0125$ (nominal significance level of $p<0.05$ adjusted for multiple comparisons).

LICO refers to the low income cut-off.

Source: Statistics Canada: National Longitudinal Survey of Children and Youth, 2002/2003.

Table D-42

Number knowledge score at age 5 predicted by frequency of reading to the child and household income level – Regression coefficients (B) and standard errors (SE) of coefficients

Predictors	Number knowledge score	
	B	SE
Constant	103.56	0.76
Frequency of reading		
Not daily	-3.07[2]	0.56
Daily[1]	0.00	0.00
Household income level		
Below LICO	-7.68[2]	1.01
LICO to less than 2 times LICO	-4.12[2]	0.84
Two times LICO to less than 3 times LICO	-1.86	0.84
Three times LICO or above[1]	0.00	0.00

B unstandardized regression coefficient

1. Reference category.
2. Coefficient differs statistically from 0.

Notes

The interaction term was found to be non-significant in a preliminary analysis.

Statistical significance: $p<0.0125$ (nominal significance level of $p<0.05$ adjusted for multiple comparisons).

LICO refers to the low income cut-off.

Source: Statistics Canada: National Longitudinal Survey of Children and Youth, 2002/2003.

Table D-43

Means and standard errors (SE) for number knowledge score at age 5 by participation in organized sports and household income level

Participation in organized sports	Number knowledge score age 5	
	Mean score	SE
Household income level: below LICO		
Not weekly	92.8[1]	0.76
Weekly	99.7	1.63
Household income level: LICO to less than 2 times LICO		
Not weekly	96.3[1]	0.71
Weekly	100.9	0.74
Household income level: Two times LICO to less than 3 times LICO		
Not weekly	98.2[1]	0.81
Weekly	102.5	0.66
Household income level: Three times LICO or above		
Not weekly	101.7	1.21
Weekly	102.9	0.92
Total		
Not weekly	96.6[1]	0.43
Weekly	101.9	0.47

1. Statistically significant and substantive difference between levels.

Notes

Statistical significance: $p<0.01$ for differences between 2 levels of participation in organized sports.

Substantive differences are defined as mean differences of 0.25 of a standard deviation (0.25 SD) or more, as follows: for number knowledge score at age 5, 0.25 SD=3.47.

LICO refers to the low income cut-off.

Source: Statistics Canada: National Longitudinal Survey of Children and Youth, 2002/2003.

Table D-44

Means and standard errors (SE) for number knowledge score at age 5 by participation in lessons in physical activities and household income level

	Number knowledge score age 5	
Participation in lessons in physical activities	**Mean score**	**SE**
Household income level: below LICO		
Not weekly	93.3[1]	0.80
Weekly	99.4	1.65
Household income level: LICO to less than 2 times LICO		
Not weekly	97.1[1]	0.64
Weekly	101.1	0.91
Household income level: Two times LICO to less than 3 times LICO		
Not weekly	99.9	0.71
Weekly	102.0	0.74
Household income level: Three times LICO or above		
Not weekly	102.2	0.99
Weekly	102.8	0.94
Total		
Not weekly	97.9[1]	0.41
Weekly	101.7	0.49

1. Statistically significant and substantive difference between levels.

Notes

Statistical significance: $p<0.01$ for differences between 2 levels of participation in lessons in physical activities.

Substantive differences are defined as mean differences of 0.25 of a standard deviation (0.25 SD) or more, as follows: for number knowledge score at age 5, 0.25 SD=3.47.

LICO refers to the low income cut-off.

Source: Statistics Canada: National Longitudinal Survey of Children and Youth, 2002/2003.

Table D-45

Percent and standard errors (SE) of children participating in one or more early childhood education activities at age 3 by sex of child and household income level

	Participated in one or more early childhood education activities at age 3	
	Percent	**SE**
Total (n=3,874)	50.2	1.02
Sex of child		
Female	51.2	1.43
Male	48.6	1.44
Household income level		
Below LICO (level 1)	37.8[1]	2.57
LICO to less than 2 times LICO (level 2)	45.8[1]	1.63
Two times LICO to less than 3 times LICO (level 3)	55.0	1.97
Three times LICO or above (level 4)	60.6	2.42

1. Statistically significant and substantive differences between level 1 and levels 3, 4; between level 2 and levels 3, 4.

Notes

Statistical significance: $p<0.008$ for differences among 4 levels of household income level (nominal significance level of $p<0.05$ adjusted for multiple comparisons).

Substantive differences are defined as percentage differences of 5 points or more.

LICO refers to the low income cut-off.

Source: Statistics Canada: National Longitudinal Survey of Children and Youth, 2002/2003.

Table D-46

Means and standard errors (SE) for receptive vocabulary score at age 5 by participation in early childhood education (ECE) activities at age 3 and household income level

	Receptive vocabulary score age 5	
Number of ECE activities at age 3	**Mean score**	**SE**
Household income level: below LICO		
None	93.2	1.15
One or more	94.3	1.46
Household income level: LICO to less than 2 times LICO		
None	97.4[1]	0.82
One or more	102.8	0.93
Household income level: two times LICO to less than 3 times LICO		
None	103.3[1]	0.93
One or more	107.3	0.77
Household income level: three times LICO or above		
None	105.2	0.99
One or more	105.8	0.88
Total		
None	99.2[1]	0.53
One or more	103.8	0.50

1. Statistically significant and substantive difference between levels.

Notes

Statistical significance: $p<0.01$ for differences between 2 levels of participation in ECE activities.

Substantive differences are defined as mean differences of 0.25 of a standard deviation (0.25 SD) or more, as follows: for receptive vocabulary score at age 5, 0.25 SD=3.84.

LICO refers to the low income cut-off.

Source: Statistics Canada: National Longitudinal Survey of Children and Youth, 2002/2003.

Table D-47

Means and standard errors (SE) for communication skill score at age 5 by participation in early childhood education (ECE) activities at age 3 and household income level

	Communication skill score age 5	
Number of ECE activities at age 3	**Mean score**	**SE**
Household income level: below LICO		
None	9.9	0.12
One or more	10.1	0.14
Household income level: LICO to less than 2 times LICO		
None	10.2	0.09
One or more	10.4	0.08
Household income level: two times LICO to less than 3 times LICO		
None	10.5	0.09
One or more	10.7	0.08
Household income level: three times LICO or above		
None	10.5	0.12
One or more	10.9	0.08
Total		
None	10.2	0.06
One or more	10.6	0.04

Notes

LICO refers to the low income cut-off.

Source: Statistics Canada: National Longitudinal Survey of Children and Youth, 2002/2003.

Table D-48

Means and standard errors (SE) for number knowledge score at age 5 by participation in early childhood education (ECE) activities at age 3 and household income level

	Number knowledge score age 5	
Number of ECE activities at age 3	**Mean score**	**SE**
Household income level: below LICO		
None	93.8	1.00
One or more	95.9	1.07
Household income level: LICO to less than 2 times LICO		
None	96.5	0.68
One or more	99.9	0.74
Household income level: two times LICO to less than 3 times LICO		
None	99.5	0.77
One or more	101.7	0.73
Household income level: three times LICO or above		
None	98.5[1]	0.93
One or more	105.0	0.96
Total		
None	97.0[1]	0.43
One or more	101.1	0.46

1. Statistically significant and substantive difference between levels.

Notes

Statistical significance: $p<0.01$ for differences between 2 levels of participation in ECE activities.

Substantive differences are defined as mean differences of 0.25 of a standard deviation (0.25 SD) or more, as follows: for number knowledge score at age 5, 0.25 SD=3.47.

LICO refers to the low income cut-off.

Source: Statistics Canada: National Longitudinal Survey of Children and Youth, 2002/2003.

Table D-49

Means and standard errors (SE) for copying and symbol use score at age 5 by participation in early childhood education (ECE) activities at age 3 and household income level

	Copying and symbol use score age 5	
Number of ECE activities at age 3	**Mean score**	**SE**
Household income level: below LICO		
None	95.1	1.13
One or more	98.7	1.56
Household income level: LICO to less than 2 times LICO		
None	99.0	0.75
One or more	101.6	0.69
Household income level: two times LICO to less than 3 times LICO		
None	100.8	0.80
One or more	102.6	0.84
Household income level: three times LICO or above		
None	101.7	1.16
One or more	105.1	0.94
Total		
None	99.1	0.43
One or more	102.4	0.46

Notes

LICO refers to the low income cut-off.

Source: Statistics Canada: National Longitudinal Survey of Children and Youth, 2002/2003.

Table D-50

Means and standard errors (SE) for attention score at age 5 by participation in early childhood education (ECE) activities at age 3 and household income level

	Attention score age 5	
Number of ECE activities at age 3	**Mean score**	**SE**
Household income level: below LICO		
None	8.5	0.17
One or more	8.5	0.23
Household income level: LICO to less than 2 times LICO		
None	8.8	0.12
One or more	8.9	0.11
Household income level: two times LICO to less than 3 times LICO		
None	9.0	0.14
One or more	9.2	0.11
Household income level: three times LICO or above		
None	9.1	0.15
One or more	9.4	0.13
Total		
None	8.8	0.07
One or more	9.0	0.07

Notes

LICO refers to the low income cut-off.

Source: Statistics Canada: National Longitudinal Survey of Children and Youth, 2002/2003.

Table D-51

Means and standard errors (SE) for work effort score at age 5 by participation in early childhood education (ECE) activities at age 3 and household income level

	Work effort score age 5	
Number of ECE activities at age 3	**Mean score**	**SE**
Household income level: below LICO		
None	4.0	0.09
One or more	4.1	0.12
Household income level: LICO to less than 2 times LICO		
None	4.1	0.07
One or more	4.1	0.07
Household income level: two times LICO to less than 3 times LICO		
None	4.3	0.07
One or more	4.3	0.07
Household income level: three times LICO or above		
None	4.2	0.10
One or more	4.2	0.07
Total		
None	4.2	0.04
One or more	4.2	0.04

Notes

LICO refers to the low income cut-off.

Source: Statistics Canada: National Longitudinal Survey of Children and Youth, 2002/2003.

Table D-52

Percent and standard errors (SE) of children who often display curiosity at age 5 by participation in early childhood education (ECE) activities at age 3 and household income level

	Often displays curiosity	
Number of ECE activities at age 3	**Percent**	**SE**
Household income level: below LICO		
None	55.5	3.25
One or more	54.4	4.43
Household income level: LICO to less than 2 times LICO		
None	57.4	2.40
One or more	56.8	2.45
Household income level: two times LICO to less than 3 times LICO		
None	54.2	2.88
One or more	56.1	2.78
Household income level: three times LICO or above		
None	63.7	3.41
One or more	61.5	2.96
Total		
None	57.2	1.42
One or more	57.4	1.45

Notes

LICO refers to the low income cut-off.

Source: Statistics Canada: National Longitudinal Survey of Children and Youth, 2002/2003.

Table D-53

Means and standard errors (SE) for self-control of behaviour score at age 5 by participation in early childhood education (ECE) activities at age 3 and household income level

Number of ECE activities at age 3	Self-control of behaviour score age 5	
	Mean score	SE
Household income level: below LICO		
None	5.3	0.12
One or more	5.3	0.15
Household income level: LICO to less than 2 times LICO		
None	5.4	0.09
One or more	5.4	0.08
Household income level: two times LICO to less than 3 times LICO		
None	5.5	0.09
One or more	5.6	0.07
Household income level: three times LICO or above		
None	5.5	0.11
One or more	5.7	0.09
Total		
None	5.4	0.06
One or more	5.5	0.05

Notes

LICO refers to the low income cut-off.

Source: Statistics Canada: National Longitudinal Survey of Children and Youth, 2002/2003.

Table D-54

Percent and standard errors (SE) of children who often play cooperatively at age 5 by participation in early childhood education (ECE) activities at age 3 and household income level

	Often plays cooperatively	
Number of ECE activities at age 3	**Percent**	**SE**
Household income level: below LICO		
None	83.9	2.48
One or more	89.6	2.86
Household income level: LICO to less than 2 times LICO		
None	86.5[1]	1.91
One or more	92.2	1.19
Household income level: two times LICO to less than 3 times LICO		
None	91.6	1.77
One or more	91.7	1.49
Household income level: three times LICO or above		
None	92.3	1.79
One or more	95.8	1.20
Total		
None	88.1	1.09
One or more	92.6	0.75

1. Statistically significant and substantive difference between levels.

Notes

Statistical significance: $p<0.01$ for differences between 2 levels of participation in ECE activities.

Substantive differences are defined as percentage differences of 5 points or more.

LICO refers to the low income cut-off.

Source: Statistics Canada: National Longitudinal Survey of Children and Youth, 2002/2003.

Table D-55

Percent and standard errors (SE) of children who often show independence in dressing at age 5 by participation in early childhood education (ECE) activities at age 3 and household income level

	Often independent in dressing	
Number of ECE activities at age 3	**Percent**	**SE**
Household income level: below LICO		
None	81.7	2.59
One or more	79.0	3.77
Household income level: LICO to less than 2 times LICO		
None	80.3	2.11
One or more	85.0	1.75
Household income level: two times LICO to less than 3 times LICO		
None	85.6	1.97
One or more	85.3	1.86
Household income level: three times LICO or above		
None	79.3	3.11
One or more	81.7	2.48
Total		
None	81.7	1.28
One or more	83.5	1.13

Notes

LICO refers to the low income cut-off.

Source: Statistics Canada: National Longitudinal Survey of Children and Youth, 2002/2003.

Table D-56

Percent and standard errors (SE) of children who often show independence in cleanliness at age 5 by participation in early childhood education (ECE) activities at age 3 and household income level

Number of ECE activities at age 3	Often independent in cleanliness	
	Percent	SE
Household income level: below LICO		
None	81.1	2.98
One or more	83.4	3.29
Household income level: LICO to less than 2 times LICO		
None	82.2	2.03
One or more	87.8	1.70
Household income level: two times LICO to less than 3 times LICO		
None	87.6	1.96
One or more	88.5	1.71
Household income level: three times LICO or above		
None	89.6	2.07
One or more	84.4	2.33
Total		
None	84.4	1.12
One or more	86.6	1.08

Notes

LICO refers to the low income cut-off.

Source: Statistics Canada: National Longitudinal Survey of Children and Youth, 2002/2003.

Table D-57

Language and communication skill – Means and standard errors (SE) for communication skill score at age 3 and for difference between age 3 and age 5, by sex of child and household income level

	Communication skill score			
	Mean score age 3	SE	Difference age 3 to age 5	SE
Total (n=3,777)	9.8	0.04	+0.61	0.04
Sex of child				
Female	10.0[1]	0.05	+0.60	0.06
Male	9.6	0.06	+0.62	0.07
Household income level				
Below LICO (level 1)	9.2[2]	0.12	+0.80	0.14
LICO to less than 2 times LICO (level 2)	9.7[2]	0.07	+0.59	0.07
Two times LICO to less than 3 times LICO (level 3)	10.0	0.07	+0.57	0.07
Three times LICO or above (level 4)	10.2	0.08	+0.53	0.08

1. Statistically significant and substantive difference between levels.
2. Statistically significant and substantive differences between level 1 and levels 2, 3, 4; between level 2 and level 4.

Notes

Statistical significance: $p<0.01$ for differences between 2 levels of sex of child; $p<0.008$ for differences among 4 levels of household income level (nominal significance level of $p<0.05$ adjusted for multiple comparisons).

Substantive differences are defined as mean differences of 0.25 of a standard deviation (0.25 SD) or more, as follows: for communication skill score at age 3, 0.25 SD=0.49; for difference score age 3 to age 5, 0.25 SD=0.49.

LICO refers to the low income cut-off.

Source: Statistics Canada: National Longitudinal Survey of Children and Youth, 2002/2003.

Table D-58

Self-regulation of learning – Means and standard errors (SE) for attention score at age 3 and for difference between age 3 and age 5, by sex of child and household income level

	Attention score			
	Mean score age 3	SE	Difference age 3 to age 5	SE
Total (n=3,799)	8.8	0.05	+0.13	0.05
Sex of child				
Female	8.9	0.07	+0.40[2]	0.07
Male	8.7	0.07	-0.12	0.07
Household income level				
Below LICO (level 1)	8.2[1]	0.13	+0.24	0.15
LICO to less than 2 times LICO (level 2)	8.7	0.08	+0.19	0.09
Two times LICO to less than 3 times LICO (level 3)	9.1	0.08	-0.01	0.09
Three times LICO or above (level 4)	9.1	0.10	+0.13	0.10

1. Statistically significant and substantive differences between level 1 and levels 3, 4.
2. Statistically significant and substantive difference between levels.

Notes

Statistical significance: $p<0.008$ for differences among 4 levels of household income level (nominal significance level of $p<0.05$ adjusted for multiple comparisons).

Substantive differences are defined as mean differences of 0.25 of a standard deviation (0.25 SD) or more, as follows: for attention score at age 3, 0.25 SD=0.57; for difference score age 3 to age 5, 0.25 SD=0.60.

LICO refers to the low income cut-off.

Source: Statistics Canada: National Longitudinal Survey of Children and Youth, 2002/2003.

Table D-59

Self-regulation of learning – Means and standard errors (SE) for work effort score at age 3 and for difference between age 3 and age 5, by sex of child and household income level

	Work effort score			
	Mean score age 3	SE	Difference age 3 to age 5	SE
Total (n=3,711)	3.9	0.03	+0.31	0.03
Sex of child				
Female	4.0	0.04	+0.34	0.05
Male	3.8	0.04	+0.28	0.05
Household income level				
Below LICO (level 1)	3.6[1]	0.08	+0.45	0.10
LICO to less than 2 times LICO (level 2)	3.9	0.04	+0.23	0.06
Two times LICO to less than 3 times LICO (level 3)	4.0	0.06	+0.34	0.07
Three times LICO or above (level 4)	3.9	0.06	+0.29	0.07

1. Statistically significant and substantive difference between level 1 and level 3.

Notes

Statistical significance: $p<0.008$ for differences among 4 levels of household income level (nominal significance level of $p<0.05$ adjusted for multiple comparisons).

Substantive differences are defined as mean differences of 0.25 of a standard deviation (0.25 SD) or more, as follows: for work effort score at age 3, 0.25 SD=0.33; for difference score age 3 to age 5, 0.25 SD=0.40.

LICO refers to the low income cut-off.

Source: Statistics Canada: National Longitudinal Survey of Children and Youth, 2002/2003.

Table D-60

Self-regulation of learning – Percent and standard errors (SE) of children reported to often display curiosity at age 3, and change from age 3 to age 5, by sex of child and household income level

	Often displays curiosity		
	Percent at age 3	SE	Change age 3 to age 5
Total (n=3,826)	63.8	0.96	-6.5
Sex of child			
Female	57.8[1]	1.37	-10.3
Male	69.5	1.38	-2.9
Household income level			
Below LICO (level 1)	60.9	2.61	-6.0
LICO to less than 2 times LICO (level 2)	64.8	1.56	-7.7
Two times LICO to less than 3 times LICO (level 3)	64.6	1.75	-9.4
Three times LICO or above (level 4)	62.7	2.19	-0.2

1. Statistically significant and substantive difference between levels.

Notes

Slight inconsistencies between tables are due to small numbers of cases where the outcome score is not available at both ages.

Statistical significance: $p<0.01$ for differences between 2 levels of sex of child.

Substantive differences are defined as percentage differences of 5 points or more.

LICO refers to the low income cut-off.

Source: Statistics Canada: National Longitudinal Survey of Children and Youth, 2002/2003.

Table D-61

Percent and standard errors (SE) of children with two levels of curiosity at age 5 by curiosity level at age 3 and sex of the child

	Curiosity level age 5		
Curiosity level age 3	**Not high**	**High**	**SE**
Not high			
Female	61.5	38.5[1]	2.26
Male	49.7	50.3	2.46
High			
Female	45.9	54.1[2]	2.04
Male	26.2	73.8	1.58
Total			
Female	52.5	47.5[3]	1.55
Male	33.4	66.6	1.38

1. Statistically significant and substantive association between sex of child and curiosity level at age 5: $X^2 = 11.6$, 1df, $p<0.001$.

2. Statistically significant and substantive association between sex of child and curiosity level at age 5: $X^2 = 55.4$, 1df, $p<0.001$.

3. Statistically significant and substantive association between sex of child and curiosity level at age 5: $X^2 = 83.7$, 1df, $p<0.001$.

Notes

Substantive differences are defined as percentage differences of 5 points or more.

Source: Statistics Canada: National Longitudinal Survey of Children and Youth, 2002/2003.

Table D-62

Self-control of behaviour – Means and standard errors (SE) for self-control of behaviour score at age 3 and for difference between age 3 and age 5, by sex of child and household income level

	Self-control of behaviour score			
	Mean score age 3	SE	Difference age 3 to age 5	SE
Total (n=3,759)	5.2	0.04	+0.24	0.04
Sex of child				
Female	5.3	0.05	+0.38[2]	0.04
Male	5.2	0.05	+0.11	0.06
Household income level				
Below LICO (level 1)	5.0[1]	0.09	+0.26	0.09
LICO to less than 2 times LICO (level 2)	5.2	0.06	+0.27	0.07
Two times LICO to less than 3 times LICO (level 3)	5.3	0.07	+0.24	0.07
Three times LICO or above (level 4)	5.5	0.07	+0.18	0.08

1. Statistically significant and substantive difference between level 1 and level 4.
2. Statistically significant difference between levels.

Notes

Statistical significance: $p<0.01$ for differences between 2 levels of sex of child; $p<0.008$ for differences among 4 levels of household income level (nominal significance level of $p<0.05$ adjusted for multiple comparisons).

Substantive differences are defined as mean differences of 0.25 of a standard deviation (0.25 SD) or more, as follows: for self-control of behaviour score at age 3, 0.25 SD=0.40; for difference score age 3 to age 5, 0.25 SD=0.43.

LICO refers to the low income cut-off.

Source: Statistics Canada: National Longitudinal Survey of Children and Youth, 2002/2003.

Table D-63

Social competence – Percent and standard errors (SE) of children reported to often play cooperatively at age 3, and change from age 3 to age 5, by sex of child and household income level

	Often plays cooperatively		
	Percent at age 3	SE	Change age 3 to age 5
Total (n=3,834)	81.7	0.82	+8.6
Sex of child			
Female	83.3	1.06	+8.4
Male	80.2	1.18	+8.7
Household income level			
Below LICO (level 1)	78.3	2.19	+7.6
LICO to less than 2 times LICO (level 2)	80.8	1.35	+8.3
Two times LICO or above[1] (level 3)	83.6	1.11	+9.2

1. The two highest income levels were combined for this analysis because of low cell numbers.

Notes

Slight inconsistencies between tables are due to small numbers of cases where the outcome score is not available at both ages.

LICO refers to the low income cut-off.

Source: Statistics Canada: National Longitudinal Survey of Children and Youth, 2002/2003.

Table D-64

Percent and standard errors (SE) of children with two levels of cooperative play at age 5 by cooperative play level at age 3 and household income level

	Cooperative play level age 5		
Cooperative play level age 3	**Not high**	**High**	**SE**
Not high			
Below LICO	19.9	80.1	5.34
LICO to less than 2 times LICO	18.1	81.9	2.92
Two times LICO or above	19.7	80.3	2.73
High			
Below LICO	12.5	87.5[1]	1.94
LICO to less than 2 times LICO	9.2	90.8	1.26
Two times LICO or above	4.7	95.3	0.73
Total			
Below LICO	14.1	85.9[2]	1.95
LICO to less than 2 times LICO	10.9	89.1	1.22
Two times LICO or above	7.2	92.8	0.78

1. Statistically significant and substantive association between household income level and cooperative play level at age 5: X^2=19.8, 2df, p<0.001.
2. Statistically significant and substantive association between household income level and cooperative play level at age 5: X^2=15.5, 2df, p<0.001.

Notes

The two highest income levels have been combined because of low numbers in some cells.

Statistical significance: p<0.01 for X^2 test.

Substantive differences are defined as percentage differences of 5 points or more.

LICO refers to the low income cut-off.

Source: Statistics Canada: National Longitudinal Survey of Children and Youth, 2002/2003.

Table D-65

Social competence – Percent and standard errors (SE) of children reported to often display independence in dressing at age 3, and change from age 3 to age 5, by sex of child and household income level

	Often independent in dressing		
	Percent at age 3	SE	Change age 3 to age 5
Total (n=3,831)	67.9	0.97	+14.9
Sex of child			
Female	78.5[1]	1.24	+10.2
Male	57.6	1.57	+21.3
Household income level			
Below LICO (level 1)	70.3	2.52	+10.4
LICO to less than 2 times LICO (level 2)	69.7	1.54	+13.0
Two times LICO to less than 3 times LICO (level 3)	66.5	1.95	+18.9
Three times LICO or above (level 4)	64.3	2.21	+14.5

1. Statistically significant and substantive difference between levels.

Notes

Slight inconsistencies between tables are due to small numbers of cases where the outcome score is not available at both ages.

Statistical significance: $p<0.01$ for differences between 2 levels of sex of child.

Substantive differences are defined as percentage differences of 5 points or more.

LICO refers to the low income cut-off.

Source: Statistics Canada: National Longitudinal Survey of Children and Youth, 2002/2003.

Table D-66

Percent and standard errors (SE) of children with two levels of independence in dressing at age 5 by independence dressing at age 3 and sex of the child

	Independence in dressing age 5		
Independence in dressing age 3	**Not high**	**High**	**SE**
Not high			
Female	26.7	73.3	2.85
Male	28.9	71.1	2.41
High			
Female	9.6	90.4[1]	1.09
Male	15.3	84.7	1.54
Total			
Female	13.3	86.7[2]	1.10
Male	21.1	78.9	1.30

1. Statistically significant and substantive association between sex of child and independence dressing at age 5: X^2=9.1, 1df, p=0.003.
2. Statistically significant and substantive association between sex of child and independence dressing at age 5: X^2=21.0, 1df, p<0.001.

Notes

Statistical significance: p<0.01 for X^2 test.

Substantive differences are defined as percentage differences of 5 points or more.

Source: Statistics Canada: National Longitudinal Survey of Children and Youth, 2002/2003.

Table D-67

Social competence – Percent and standard errors (SE) of children reported to often display independence in cleanliness at age 3, and change from age 3 to age 5, by sex of child and household income level

	Often independent in cleanliness		
	Percent at age 3	SE	Change age 3 to age 5
Total (n=3,829)	71.7	0.91	+13.9
Sex of child			
Female	76.6[1]	1.28	+11.3
Male	67.1	1.34	+16.4
Household income level			
Below LICO (level 1)	69.8	2.36	+12.2
LICO to less than 2 times LICO (level 2)	72.5	1.46	+12.4
Two times LICO to less than 3 times LICO (level 3)	71.6	1.74	+16.6
Three times LICO or above (level 4)	72.0	2.25	+14.4

1. Statistically significant and substantive difference between levels.

Notes

Slight inconsistencies between tables are due to small numbers of cases where the outcome score is not available at both ages.

Statistical significance: $p<0.01$ for differences between 2 levels of sex of child.

Substantive differences are defined as percentage differences of 5 points or more.

LICO refers to the low income cut-off.

Source: Statistics Canada: National Longitudinal Survey of Children and Youth, 2002/2003.

Table D-68

Percent and standard errors (SE) of children with two levels of independence in cleanliness at age 5 by independence in cleanliness at age 3 and sex of the child

	Independence in cleanliness age 5		
Independence in cleanliness age 3	**Not high**	**High**	**SE**
Not high			
Female	24.1	75.9	2.61
Male	22.0	78.0	2.04
High			
Female	8.5	91.5[1]	0.96
Male	13.8	86.2	1.30
Total			
Female	12.1	87.9	0.98
Male	16.5	83.5	1.14

1. Statistically significant and substantive association between sex of child and independence in cleanliness at age 5: X^2= 11.0, 1df, p<0.001.

Notes

Statistical significance: p<0.01 for X^2 test.

Substantive differences are defined as percentage differences of 5 points or more.

Source: Statistics Canada: National Longitudinal Survey of Children and Youth, 2002/2003.